

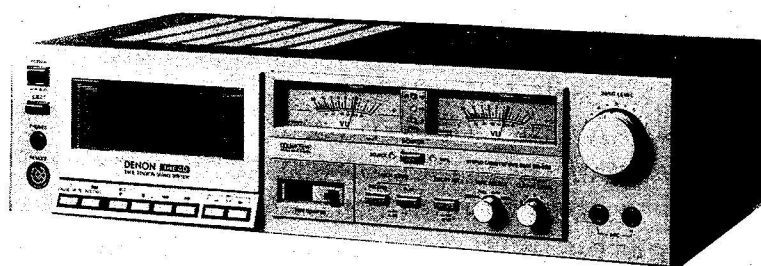
DENON

Hi-Fi Component

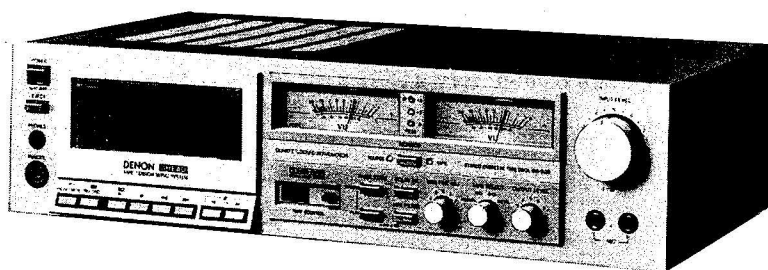
SERVICE MANUAL

STEREO CASSETTE TAPE DECK

MODEL
DR-320 / DR-330



DR-320




DR-330

NIPPON COLUMBIA CO., LTD.

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WARNING:

Parts marked with  are of importance in respect to the safety use the specified type without tail.

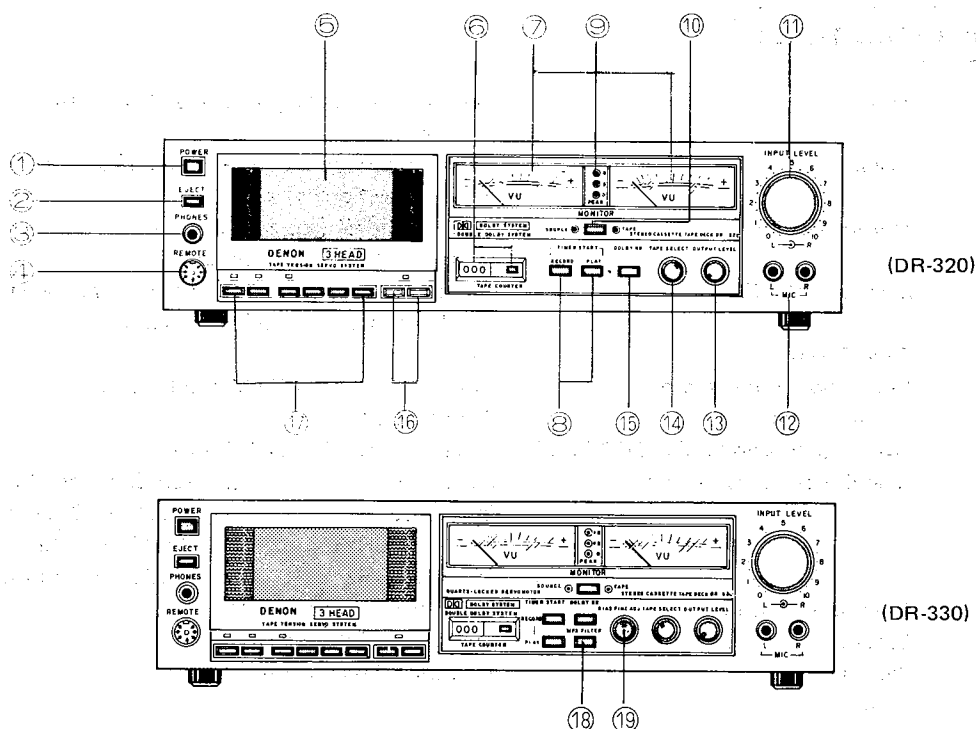
SPECIFICATIONS

Type	Vertical tape loading 4-track 2-channel stereo cassette tape deck
Heads	Recording/Playback combination head (Ferrite) x 1 Erase head (Ferrite) x 1
Motors (DR-320)	DC servomotor (for capstan) x 1 DC motor (for reel winding) x 1
Motors (DR-330)	Quartz locked, PLL DC servomotor (for capstan) x 1 Coreless motor (for reel winding) x 1
Tape Speed	4.8 cm/sec.
Fast winding, Rewinding time	Approx. 90 sec. on C-60 cassette tape
Recording bias	Approx. 85KHz
Overall S/N ratio (at 3% THD level)	More than 67dB (CCIR/ARM)
Overall frequency response	25~21,000Hz (at -20dB on Metal tape) 30~20,000Hz (at -20dB on CrO ₂ tape) 30~19,000Hz (at -20dB on FeCr tape) 30~19,000Hz (at -20dB on LH tape)
Channel separation	More than 40dB (at 1KHz)
Crosstalk	More than 65dB (at 1KHz)
Wow & flutter	Less than 0.04% w.rms
Inputs	
Microphone	0.35mV (-67dB) input level control at maximum. Input impedance: 10K ohm unbalanced
Line	70mV (-21dB) input level control at max. Input impedance: 50K ohm unbalanced
Outputs	
Line	775mV (0dB) output level control at max. (with 10K ohm load, recorded level of 200pwb/mm)
Headphone	1.2mW output level control at max. (optimum load impedance 8ohm~2K ohm)
Power supply	50Hz/60Hz compatible
Power consumption	25W
Dimensions	434W x 117H x 300D (mm)
Weight	7.0kg

Above specifications and design styling are subject to change for improvement.

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NAMES OF PARTS AND FUNCTION



1 Power switch

Make sure the timer switch is "off" (■) and then turn "on" (■) the power switch. The lamps in the level meters and the tape window light. The set is now ready for operation. Push the switch again to turn "off" (■) the power.

2 Eject button

This button opens the cassette compartment to permit removal of the tape cassette.

3 Headphone Jack

Use for enjoying music through the headphones or for monitoring. Use a headphone set with an impedance of 8 ohm to 2Kohm.

4 Remote control connector

The remote controller (Model RC-55, RC-56), separately available, can be connected for remote control of the deck. Even when the remote controller is connected, the operation buttons on the deck continue to function.

5 Cassette compartment

This contains the tape cassette and holds it firmly in position. While the cassette compartment is open, the operation buttons do not function.

6 Tape counter

The number in the counter indicates the amount of tape wound up. It is a great convenience if you write down the counter indication as well as the recorded content for instant reference. Press the reset button to reset the counter "000".

7 Level meter

Input/output level is indicated. While the monitor switch is set to SOURCE, the input level is indicated. When the switch is set to TAPE, the output level is indicated.

8 Timer start switches

*Be sure to turn to "off" (■) for normal use. If timer start recording is desired, turn to "on" (■) and set the switch at the RECORD position. For timer start playback, turn to "on" (■) and set the switch at the PLAY position.

9 Peak level indicator

*The lamps are designed to indicate +8dB by the red and +5dB by the orange and 0dB by the green lamps. If an excessive level over +8dB is picked up, the red lamp lights.

10 Monitor switch

The three head system of this tape deck provides simultaneous monitoring during recording.

TAPE (■)

- The recorded sound on tape is monitored during recording (The green lamp lights). Be sure to turn it to the "TAPE" position for playback (replay). If set to the "SOURCE" position, input signals through the input jacks or microphone jacks are monitored but not the playback signals.

SOURCE (■)

- The signals through the input jacks or microphone jacks are monitored (The orange lamp lights).

11 Input level control

The input levels of the right and left channels are independently adjusted in accordance with the signal level to be recorded. The front knob is for the left channel and the rear one is for the right channel. This level control does not function during playback.

12 Microphone jack

Plug in the microphone plugs for microphone recording. Use microphones with an output level higher than -67dB and a 6mm diam. plug.


13 Output level control

Playback output level or record monitoring output are adjusted independently from the level meter indicators. The headphone output is also adjusted by this knob.

14 Tape selector

The recording bias and equalizer are simultaneously switched for the optimum setting for different kinds of tapes, including high performance metal tapes. Select the position according to the kind tape to be used.









15 Dolby NR switch

Turn "on" () either for DOLBY encoded recording or playback of DOLBY encoded tape.

16 Cueing button







Press this button in the playback, recording, fast forward, rewind or stop modes for cueing.



17 Tape control buttons

PAUSE/MUTE button 	Press this during playback. The tape stops and a green lamp turns off indicating the Pause condition. While the button is being depressed during recording, muted (no sound) recording condition is maintained and the orange lamp flickers at about a one-second interval with the tape running. When the tape stops, and the orange and red lamps light bringing in the standby for recording again, press button ().
RECORD button 	Load a cassette tape and press this button. This places the unit in standby for recording (pause) and the red and orange lamps light. Press the play button () to start recording. *If the erase prevention tab of the loaded cassette is broken off, this button does not function.
PLAY button 	When pressed during stop, fast forward or rewind, playback begins with the green lamp lights on. When pressed during stand by in the recording (pause) mode, recording starts.
STOP button 	When pressed in any operating mode, operation stops is obtained.
REWIND button 	When pressed, the tape is rewound.
FAST FORWARD button 	When pressed, the tape is rapidly wound in the forward direction.

18 MPX (multiplex) filter switch (DR-330)

Set the switch in combination with the DOLBY NR switch as follows:

DOLBY NR switch off () MPX FILTER switch off ()	For normal recording and playback.
DOLBY NR switch on () MPX FILTER switch off ()	For DOLBY encoded recording/playback other than from FM stereo broadcasting. Also for playback of DOLBY encoded tape record.
DOLBY NR switch on () MPX FILTER switch on ()	For DOLBY encoded recording of FM stereo broadcasts.

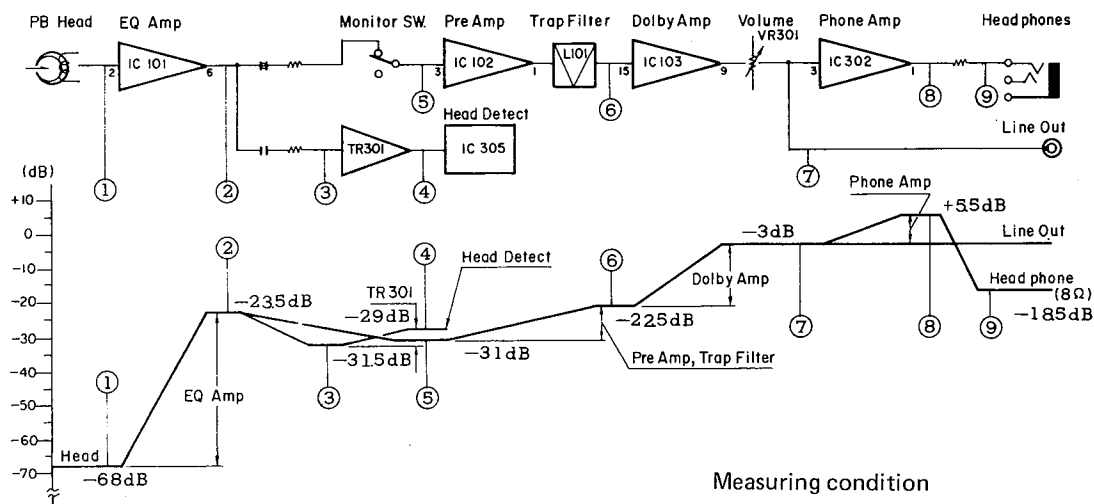
Note : The other combination of DOLBY NR switch off () and MPX FILTER switch on () is possible, but the high frequency is slightly reduced.

19 Bias Fine adjustment (DR-330)

Adjust the bias according to the tape characteristics. Standard biasing is obtained at the center click-stop position. (Refer to the BIAS CHART).

LEVEL DIAGRAM

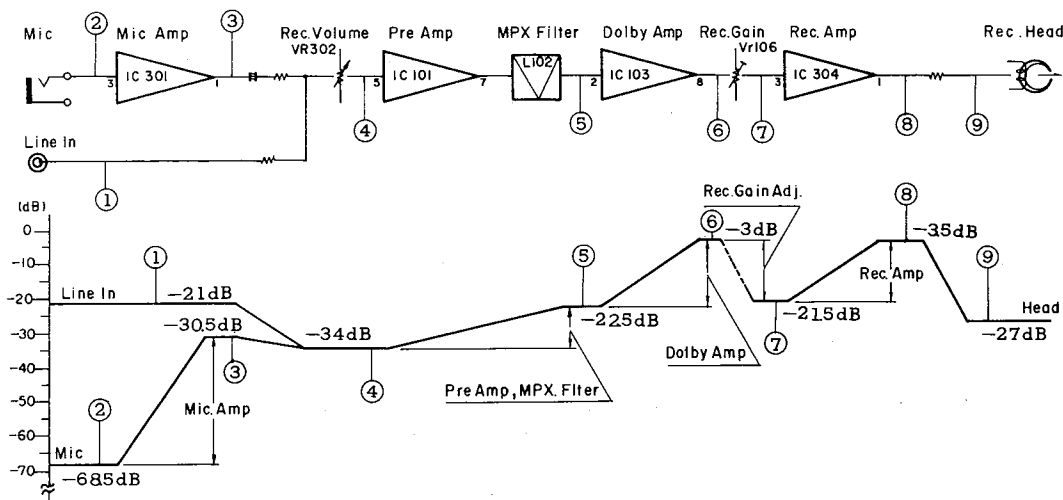
PLAYBACK SYSTEM LEVEL DIAGRAM



Measuring condition

1. Frequency: 1 KHz
Input impedance: 600Ω
2. Play head: Open
3. Tape selector switch: CrO₂
4. Line output: 0 VU (-3dB)
5. VR301: MAX position

RECORDING SYSTEM LEVEL DIAGRAM



Measuring condition

1. Frequency: 1 KHz
Input impedance: 600Ω
2. Tape selector switch: CrO₂
3. Record/Play output: 0 VU (-3dB)
4. VR106 (REC): MAX position

TAPE SELECTOR/BIAS ADJ/CHART

Set the tape selector position and bias adjustment for recording and playback to yield the best tape performance with the least distortion by referring to the chart below:

Brand	Type No.	Tape selector position	Bias Scale (DR-330)	Brand	Type No.	Tape selector position	Bias Scale (DR-330)
DENON	DX 1	C-50 NORMAL	+2	maxell	UD	C-60 NORMAL	2
		C-90 NORMAL	0			C-90 NORMAL	0
	DX 3	C-60 NORMAL	0		XL I	C-60 NORMAL	+1
		C-90 NORMAL	-2			C-90 NORMAL	0
	DX 5	C-60 FeCr	0		XL II	C-60 CrO ₂	0
SONY		C-90 FeCr	-2	TDK		C-90 CrO ₂	-2
	DX 7	C-60 CrO ₂	-2		XL II-S	C-46 CrO ₂	+3
		C-90 CrO ₂	-2			C-90 CrO ₂	+2
	DXM	C-50 METAL	0		MX	C-46 METAL	-1
	AHF	C-60 NORMAL	+2			C-90 METAL	-1
		C-90 NORMAL	+1		D	C-60 NORMAL	-6
	BHF	C-60 NORMAL	-2			C-90 NORMAL	-8
		C-90 NORMAL	-2		AD	C-60 NORMAL	0
	CHF	C-60 NORMAL	-3			C-90 NORMAL	+2
		C-90 HORMAL	-3		OD	C-60 NORMAL	+1
	JHF	C-60 CrO ₂	0			C-90 NORMAL	+1
		C-90 CrO ₂	0		SA	C-60 CrO ₂	-4
	DUAD	C-60 FeCr	0			C-90 CrO ₂	-4
		C-90 FeCr	-4		SA-X	C-46 CrO ₂	0
	METALLIC	C-46 METAL	-4			C-90 CrO ₂	0
FUJI		C-90 METAL	-2	BASF		C-90 METAL	0
	DR	C-60 NORMAL	0		MA	C-46 METAL	0
		C-90 NORMAL	+1		MA-R	C-90 METAL	-2
	ER	C-60 NORMAL	0		SLH I	C-60 NORMAL	0
		C-90 NORMAL	+1			C-90 NORMAL	0
	UR	C-60 CrO ₂	0		SCR	C-60 CrO ₂	0
		C-90 CrO ₂	-1			C-90 CrO ₂	+2
	SR	C-46 METAL	0		FCR	C-60 FeCr	+1
		C-90 METAL	0			C-90 FeCr	-6
	CRYSTAL	C-60 NORMAL	-4				
SCOTCH		C-90 NORMAL	-3				
	MASTER I	C-60 NORMAL	0				
		C-90 NORMAL	+1				
	MASTER II	C-60 CrO ₂	-2				
		C-90 CrO ₂	-2				
	CLASSIC	C-60 FeCr	-6				
	MASTER III	C-60 FeCr	0				
		C-90 FeCr	-2				
	METAFINE	C-46 METAL	-6				

[1] DISASSEMBLY

Parts numbers in () are referred to the numbers on the parts list.

1. Removal of top cover

Remove six screws (310) on both sides of the top cover (220) and one screw (311) on the rear. The top cover will now be removed.

NOTE

When reassembling, be sure to observe the following points:

- (1) The top cover should be fitted as close to the front panel as possible.
- (2) Gently depress the top cover so that it properly engages the front panel.

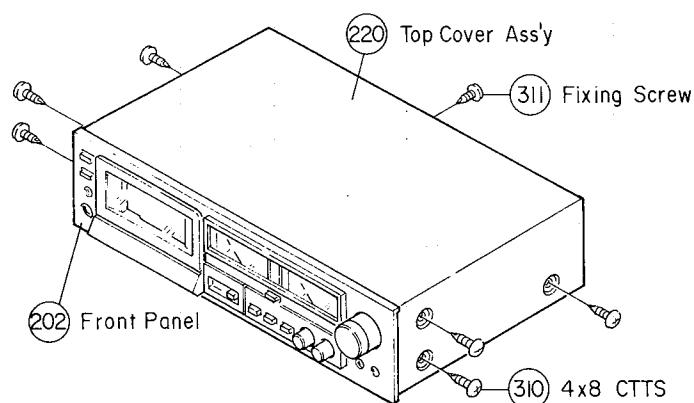


Fig. 1

2. Removal of bottom plate

Remove two screws (307) on the bottom plate (231), two screws (301) on the mechanism unit, feet (234), and four screws (308). The bottom plate will be removed.

NOTE

When reassembling the bottom plate, secure it with the screws (308, 307, 301) in that order.

(The audio circuit can be serviced by removing the top cover and bottom plate.)

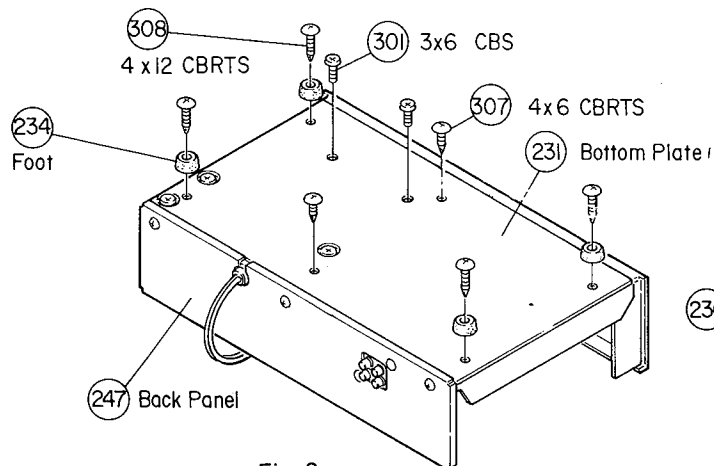


Fig. 2

3. Removal of front panel

3-1 Remove the top cover (see Item 1).

3-2 Depress the eject button to open the cassette box. Push the door frame (212) up until it is released from the cassette box, then close the cassette box.

NOTE

Special care should be taken when handling the door frame, since it is easily damaged.

3-3 Remove six screws (309) on the upper and lower sides of the front panel (202), then remove the front panel by pulling it toward you.

NOTE

When removing the front panel, make sure that the knobs, meter frame, etc. are not damaged.

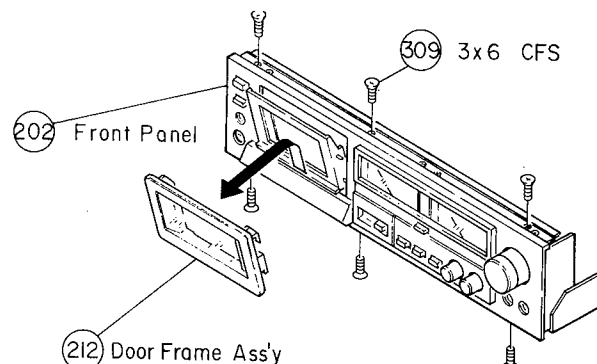


Fig. 3

4. Removal of control buttons

4-1 Remove the front panel (see Item 3).

4-2 Push both sides of the button guide (223) with fingers to remove the hook from the square hole in the front chassis (237). Pull and remove the front chassis.

4-3 Desolder the LED (228, 229, 230) from the control button circuit board (226). Also, remove the circuit board (223) of the button guide secured at eight places. The control button circuit board will be separated from the button guide. Remove the cushion (225) and control buttons (224).

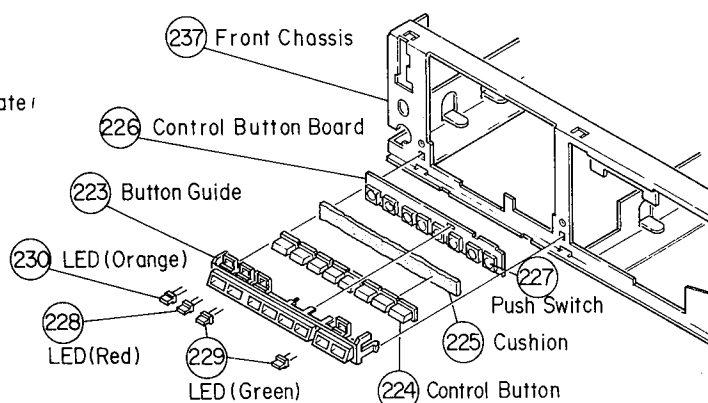


Fig. 4

NOTE

When reassembling, be sure to observe the following points:

- (1) Check the push switch (227) for proper function, then fit the control buttons in the new button guide. Attach the cushion to the control buttons. Mount the control button circuit board by soldering at eight places. Also, solder the LED.
- (2) In mounting the button guide, the lead wires of the control button circuit board should be dressed carefully.
- (3) If the cushion is not fitted to the push switch or it is not properly fitted, the control buttons become loose, resulting in the buttons being left depressed.
- (4) Use a low temperature soldering iron when mounting the button guide and control button circuit board.

5. Removal of level meter

- 5-1 Remove the top cover (220) and front panel (202) (see Items 1 and 3).
- 5-2 Remove the drive belt from the counter (205).
- 5-3 Pull and remove the knob (215).
- 5-4 The front escutcheon (204 or 272) is fitted to the front chassis (237) by a hook. Remove the hook from the rear of the front chassis before removing the escutcheon.
- 5-5 The level meter (248) is fitted to the rear of the front escutcheon by hooks. Depress two hooks on the bottom of the level meter and remove the level meter.

NOTE

- * When reassembling, check to make sure that the level meter is properly fitted to the meter frame on the front escutcheon.
- * Mount the knobs observing the match marks.

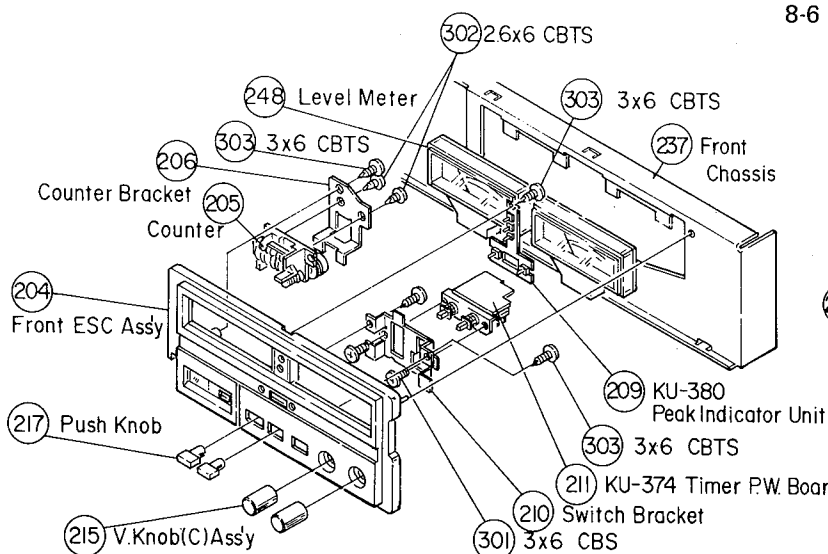


Fig. 5

6. Removal of counter

- 6-1 Remove the top cover (220), front panel (202) and counter belt (50), then remove the front escutcheon (204 or 272) from the front chassis (237).
- 6-2 Remove the screw (303) holding the counter bracket (206) at the rear of the front escutcheon. Slide the counter bracket until the lower hook is disengaged. The counter bracket will be removed together with the counter (205).
- 6-3 Remove two screws (302) holding the counter.

7. Removal of peak indicator unit(KU-380)

- 7-1 Remove the front escutcheon (204 or 272) (see Item 5-4).
- 7-2 Remove the screw (303), holding the peak indicator unit (209) at the rear of the front escutcheon, and two hooks.
(When reassembling, check to make sure that the five indicator LED's are firmly fitted to the front escutcheon.)

8. Removal of mechanism unit

- 8-1 Remove the top cover (220) and front panel (202).
- 8-2 Remove the hole IC circuit board (see Item 21 "Replacement of hole IC" on mechanism adjustment and check).
- 8-3 Disconnect the lead wires from the head. Remove four connectors (two 2P, one 3P and one 4P) from the audio circuit board (249).

NOTE

The orange and white lead wires connected to the two 2P connectors are for R channel and L channel, respectively. Check that the connectors are plugged correctly.

- 8-4 Remove the 12P connector from the driver circuit board (251) mounted at the rear of the mechanism unit (200 or 201).
- 8-5 Remove four screws (301) on the front of the mechanism unit and two screws (301) holding the bottom plate (231).
- 8-6 With the mechanism lowered as far as it will go, lift it up for removal.

To reassemble, follow the above procedures in reverse order.

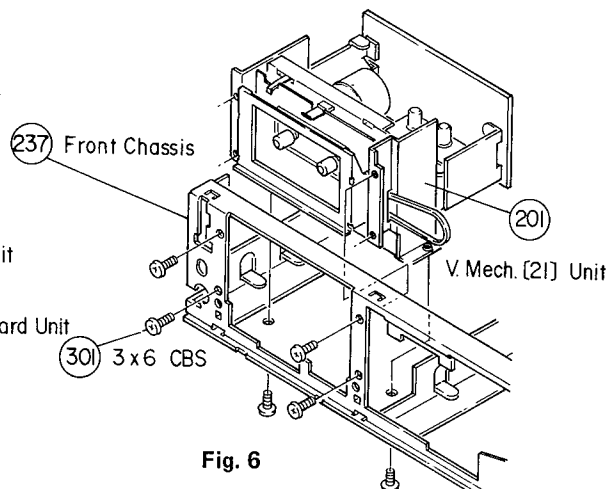


Fig. 6

9. Removal of driver circuit board (KU-379)

First remove the top cover (220), then remove three screws (301) from the driver circuit board (251). Release the lead wires from the wire clamp. The circuit board will now be removed for servicing.

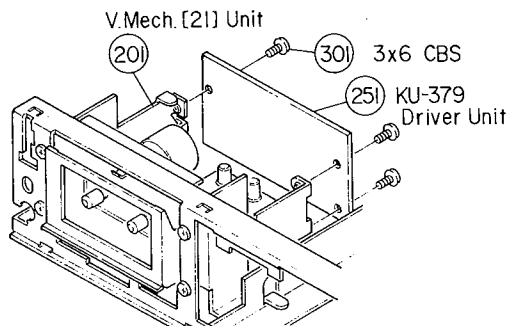


Fig. 7

10. Removal of logic and power unit (KU-378)

The logic and power unit can be serviced by removing the bottom plate (231). If it cannot be serviced even after removing the bottom plate, then remove the unit observing the following procedures.

- 10-1 First remove the top cover (220), then remove three screws (305) from the back panel (247), two screws (306) from the 4P connector base (266) and two screws (305) from the transformer bracket (235). The back panel will now be removed.
- 10-2 Remove two screws (305) holding the transformer (243), then remove the transformer from the chassis, with the lead wires left connected.
- 10-3 Remove two screws (303) on the logic and power unit (250) and two P.W.B supports (236). Slide the unit until it is released from the hook, then slide it backward while holding it by hand.

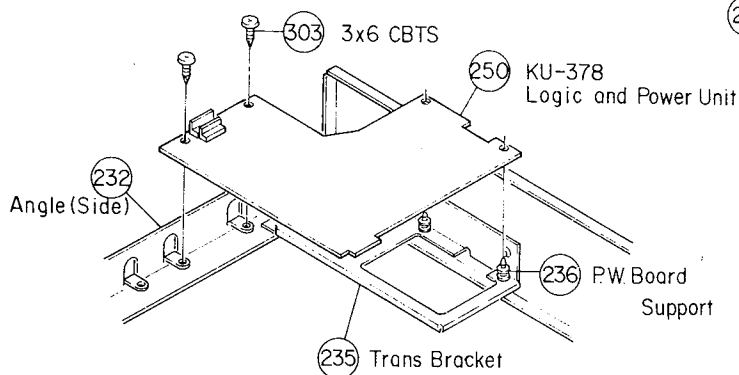


Fig. 8

11. Removal of audio amplifier unit (KU-365)

- 11-1 Pull and remove the knob C (215).
- 11-2 Remove the top cover (220), front panel (202) and front escutcheon (204 or 272) referring to the procedures outlined previously.
- 11-3 Remove the nuts holding the selector switch (260), output volume control (261) and MIC jack (262).
- 11-4 Pull and remove the push lever D (218) and F (219) from the push switches (264, 265).
- 11-5 Remove the back panel referring to the procedures outlined in the previous item 10-1.
- 11-6 Remove four screws (303) from the audio amplifier unit (249). The unit will now be removed from the rear side.

NOTE

1. When the connector has been removed, be sure to replace it correctly at the time of reassembly.
2. Normally, the audio amplifier unit can be serviced by simply removing the bottom plate (231). Do not remove the unit unnecessarily.

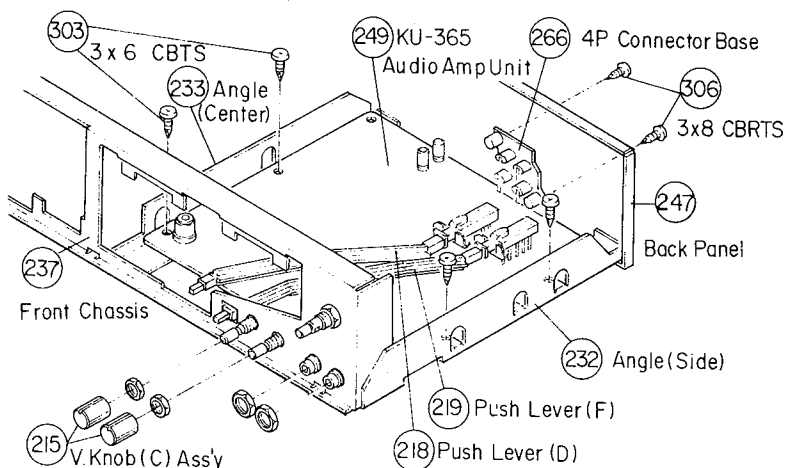


Fig. 9

[III] MECHANISM ADJUSTMENT AND CHECK

1. Replacement of pinchroller (23)

Before replacing the pinchroller, clean the surfaces of the pinchroller and capstan (20) over which tape travels. Deposits of dirt and dust on the pinchroller and capstan can result in incorrect tape transport and malfunction of the pinchroller.

Remove the pinchroller spring (25) and 2.5 E-ring (123), and the pinchroller (23) can be withdrawn together with the pressure bracket.

When reassembling, the shaft of the pressure bracket (24) must be fitted into the oval hole in the connecting lever (9) at the rear of the mechanism chassis (1).

After the pinchroller has been replaced, make a test using a C-90 tape without pads to insure that the tape is not curled at the tape guide adjacent to the head.

2. Checking the pinchroller pressure

With the tape deck set in playback mode, attach a dial tension meter (500 g) to the bracket on the center line of the pinchroller. Release the pinchroller from the capstan and then make it contact with the capstan. When the pinchroller starts running, measure the pinchroller pressure with the dial tension gauge. The pressure should be 375-475 g. If the measured pressure is incorrect, replace the pinchroller spring.

NOTE

In the playback mode, the gap between the pinchroller bracket and the pressure bracket should be more than 0.5 mm.

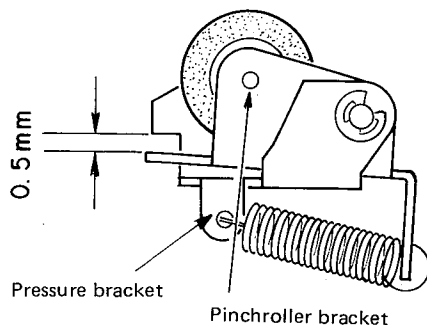


Fig. 10

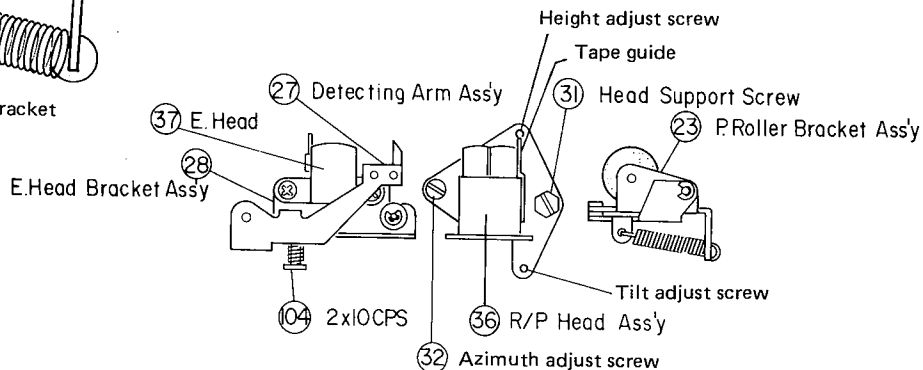


Fig. 12

3. Replacement of record/play head (36)

Remove the record/play head by loosening the head support screw (31). Next, loosen the azimuth adjust screw (32) and the record/play head can be pulled out of the mechanism. To mount the head, follow the above procedures in reverse order. Visually check that the head case and cassette are in parallel each other.

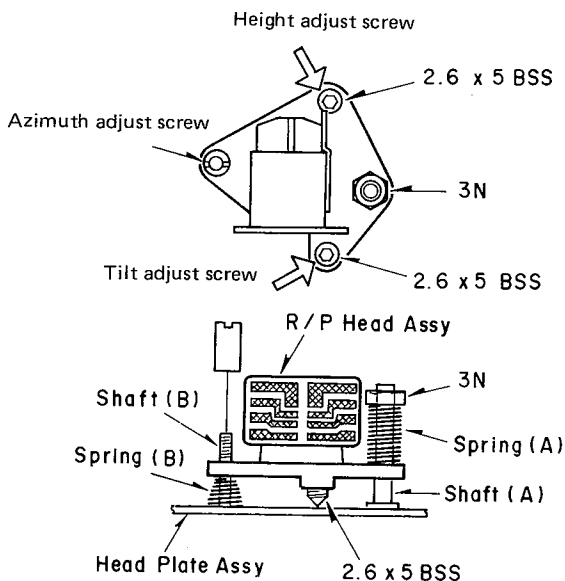


Fig. 11

4. Height/Tilt adjustment of record/play head

Load a cassette (C-90) without head pads and play the tape. Check that the tape edge is not curled (bent) at the tape guide fitted to the head, then tighten the head support screw (31). Next, tighten the azimuth adjust screw (32) until the head is centered. Turn the two tilt adjust screws on the front and back of the head, observing the condition of the tape transport, so that the tape is not curled.

5. Replacement of erase head (37)

Remove the 2 E-ring (122) on the detecting arm (27) and two screws (116) retaining the erase head.

6. Height adjustment of erase head

Attach washers to the boss of the erase head bracket (28) and to the top and bottom of the shaft of the head plate (26). Play a tape (C-90) without head pads and adjust the thickness of the washers so that the tape is not curled.

NOTE

Tape heads should be replaced individually.

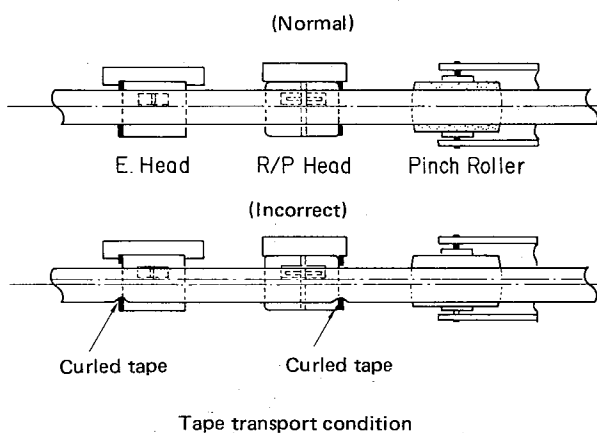


Fig. 13

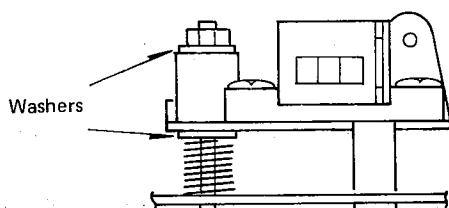


Fig. 14

7. Adjustment of gap between head plate and erase head bracket in playback mode

Adjust the mounting position of the erase head to obtain a gap of 0.3~0.7 mm between the erase head bracket and head plate.

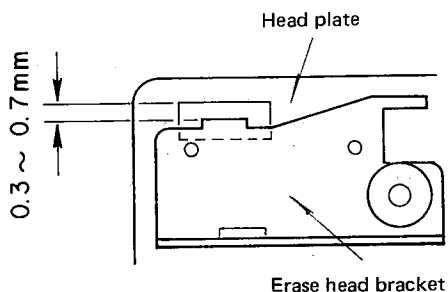


Fig. 15

8. Adjustment of gap between detecting arm (27) and erase head bracket

Pull the head plate as far as it will go during playback of tape. Turn the adjust screw to obtain a gap of 0.5~0.8 mm between the detecting arm and the erase head bracket.

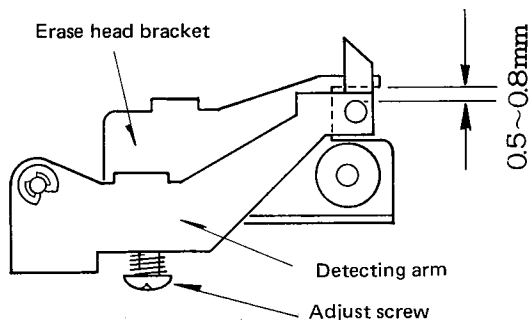


Fig. 16

9. Adjustment of axial play of capstan

Hold the capstan from the front of the mechanism. Adjust the thrust screw (56) to obtain an axial play of 0.1~0.4 mm. After the adjustment, secure the thrust screw with lock paint.

10. Adjustment of main belt drive position

Adjust the position of the pulley of the capstan motor so that the main belt runs 0.5 mm away from the edge of the flywheel.

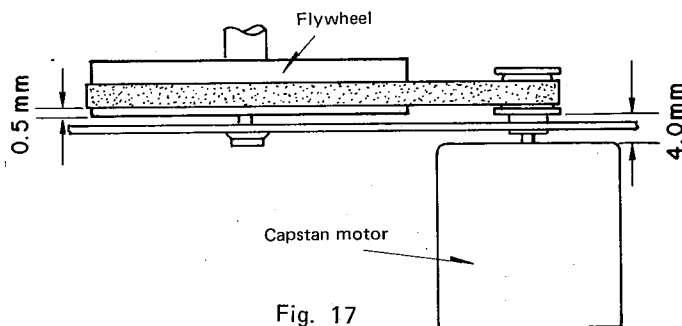


Fig. 17

11. Adjustment of excessive stroke of play solenoid

Pull the play solenoid as far as it will go. Then, adjust the mounting position of the bracket (8) retaining the solenoid so that the slide bracket (5), at the rear side of the mechanism, shifts about 0.3~0.5 mm after the head plate (26) touched the stopper.

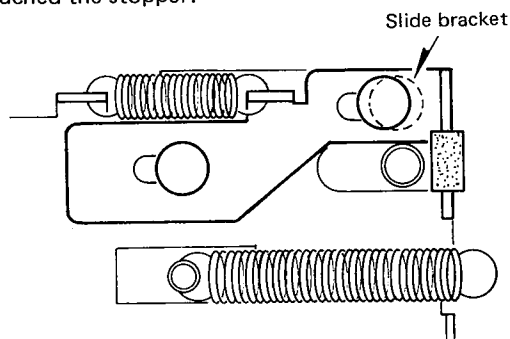


Fig. 18

12. Checking the tape take-up torque

Using a cassette type torque meter, check that the tape take-up torque is 35~70 g.cm in the middle of tape. If the measured torque is deviated, check to see that the voltage at the reel motor is 2.1V. The torque decreases when the voltage is low, and increases when it is high.

Also, check the reel thrust play in Item 13.

13. Adjustment of reel thrust play

Washers (132) 0.13t, (133) 0.25t and (134) 0.5t are fitted to the front and back of the reel. Change these washers to adjust the thrust play for 0.2~0.4 mm.

14. Checking the FF and REW torque

* Checking with cassette type torque meter

Check that the torque meter indicates 80~160 g.cm at the end of rewind and fast forward of tape

* Checking with modified cassette (see Service Manual "Model DR-230", page 12)

Load a modified cassette and hook the end of the dial tension meter (100~300 g full scale) on the triangle section of the cassette. Set the tape in FF (REW) mode and run the tape at a speed a little slower than the normal speed. Confirm that the tension meter indicates more than 60 g.cm.

15. Checking the pressures of FR idler (41) and reel (42)

With a tape set in FF or REW mode, check that the pressure is 40~60 g when the FR idler is released from the pulley (48) of the reel motor. If the specified pressure cannot be obtained, replace the pressure spring (91).

When the FR idler and reel idler are worn out, they must be replaced with new ones.

16. Checking the back tension in record/play mode

Using a cassette type torque meter, check that the back tension in playback is 2~5 g.cm. If the back tension is deviated, refer to the item "Adjustment of reel thrust play". Also replace the spring (51).

17. Checking the FF and REW time

Using a C-60 cassette, check that the FF and REW time is 60~100 seconds. If deviated, refer to Items 13 and 15.

18. Checking the CUE time

Using a C-60 cassette, check that the CUE time is 90~130 seconds.

19. Adjustment of erase preventive lever position

Adjust the mounting position of the switch (86) so that it turns ON and OFF positively when a cassette is loaded.

20. Adjustment of EJECT switch (87)

Adjust the mounting position of the switch so that it opens 0.3~0.7 mm when the cassette box is closed, and that it is switched on by the gap between the EJECT button lever and the switch just before the cassette box opens.

21. Replacement of hall IC and adjustment of its position

The hall IC unit (207) can be removed by lifting the head of the canoe rivet (208) with a screwdriver or a nippers. Adjust the mounting position of the hall IC referring to Fig. 19.

NOTE

The removed canoe rivet cannot be reused and should be replaced with a new one.

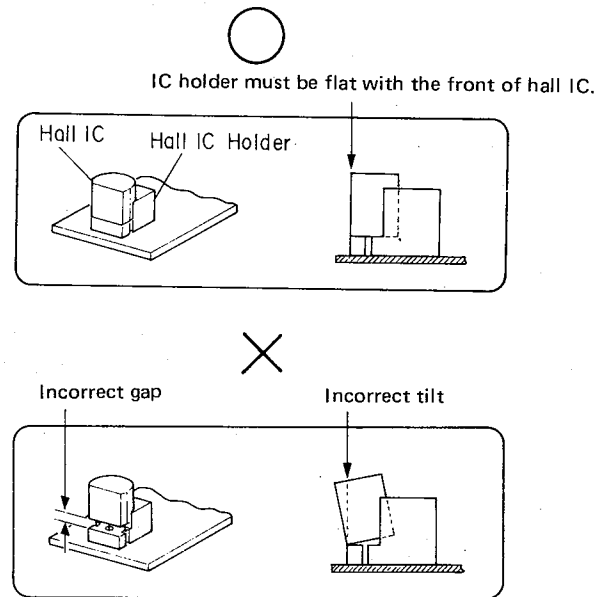


Fig. 19

22. Checking the position of cassette spring

With a cassette loaded, check that the cassette is held by the cassette spring (69) in the stop mode of tape.

[III] ELECTRICAL ADJUSTMENT

* Test instrument for adjustment

1. Adjusting screwdriver
2. Adjusting rod (square) for trap coil adjustment
3. Audio frequency generator
4. Variable resistance attenuator
5. Vacuum tube voltmeter
6. Oscilloscope
7. Frequency counter
8. Test tape (TEAC MTT-111, -114, -150, -316 or 116K)
(MAXELL XL-II) C-60
9. Cassette (Columbia C-120, modified)

* Cautions of adjustment

1. Before making adjustment, clean the surfaces of the heads, capstan and pinch roller with a gauze or cotton swab moistened with alcohol.
2. Demagnetize the record/play head and erase head using a head eraser.
3. Thoroughly demagnetize the adjusting screwdriver.
4. Set the input volume control to the MAX (clockwise) position.
5. Unless otherwise specified, set the switches and knobs as shown below. For adjustment, use LINE IN and LINE OUT jacks.

(Asterisk (*) items apply to DR-330 only.)

- DOLBY NR switch OFF
 TAPE SELECT switch . . . CrO₂
 MONITOR switch TAPE
 OUTPUT LEVEL knob . . . MAX (clockwise)
 * MPX FILTER OFF
 * BIAS FINE ADJ 0

1. Checking the tape transport

Accurate tape transport is most important for the optimum performance of the tape deck. Do not touch the adjusting parts unnecessarily.

When the record/play head needs to be replaced or adjusted, follow the procedures outlined in item "[II] Mechanism adjustment and check". To check the tape transport, load a cassette and set it in playback mode. Confirm that the tape edge does not interfere with the tape guide adjacent to the record/play head, using a lamp or a similar tool.

2. Adjustment of playback system

2-1 Azimuth adjustment

After checking the tape transport in Item 1 above, play a test tape (TEAC MTT-114). Adjust the azimuth screw so that the Lissajous' figure is maximum at the "A" portion and minimum at the "B" portion.

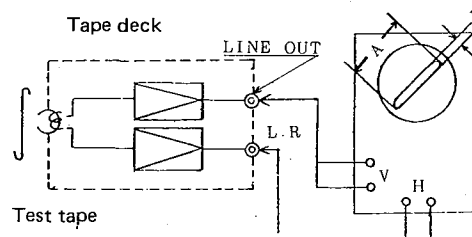


Fig. 20

2-2 Tape speed adjustment (DR-320 ONLY)

Connect a digital counter to the LINE OUT and play a test tape (TEAC MTT-111). When the tape transport has been stabilized, make adjustment at the rear of the capstan motor until the digital counter indicates 3000 ± 6 Hz.

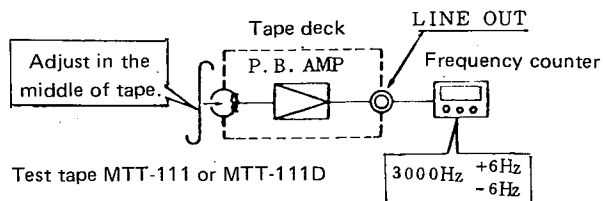


Fig. 21

2-3 Playback level adjustment

Play a Dolby level test tape (TEAC MTT-150) and adjust Vr101 and 201 until the voltage at the LINE OUT becomes 0.dB (0.775 V).

2-4 Adjustment of playback frequency response

Play a test tape (TEAC MTT-116K) and adjust Vr102 and 202 to obtain the frequency characteristic shown in Fig.22.

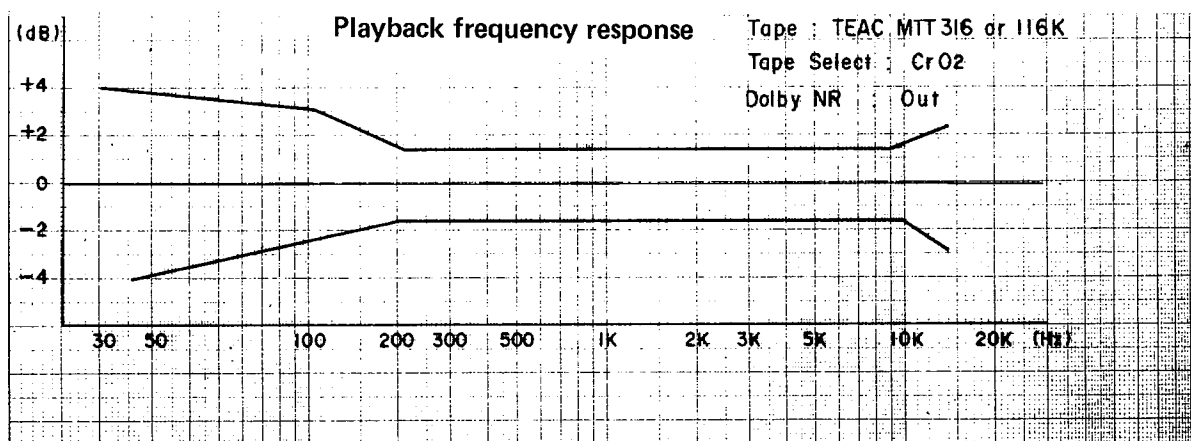


Fig. 22

3. Meter adjustment

During the adjustment of playback level, adjust Vr105 and 205 so that the VU meter indicates +3VU when the voltage at LINE OUT is 0dB.

4. DOLBY LAW adjustment

Connect a 5 kHz signal to the LINE IN and adjust the input level to obtain a voltage of -30.5dB at the test point DOLBY(L). Next, turn the DOLBY NR switch to ON and adjust Vr103 until the voltage is increased by 8dB and reaches -22.5dB.

Similarly, adjust Vr203 at the test point DOLBY (R).

5. Adjustment of recording system

5-1 Adjustment of erase voltage

With the TAPE SELECT switch in the METAL position, set a tape in recording mode. Adjust Vr302 until the voltage at the test point ERASER CUR becomes 40V at room temperature of 20°C when measured with an AC voltmeter (capable of measuring 85 kHz). When the room temperature differs from 20°C, use the conversion table in Fig. 23.

Room temperature vs. ERASER CUR
conversion table

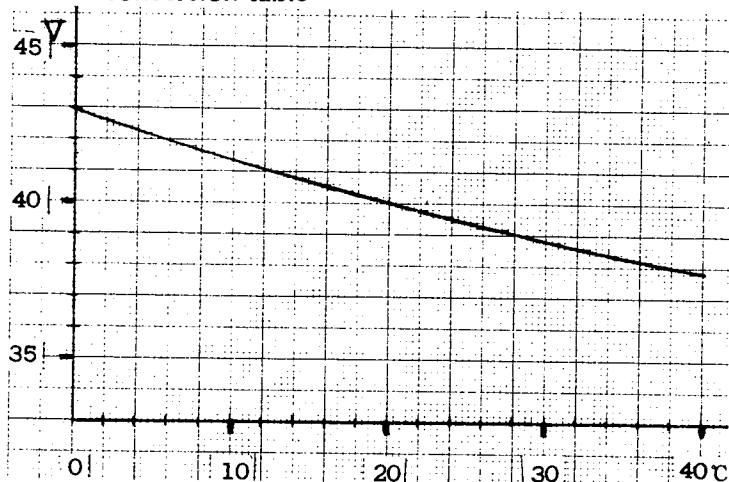


Fig. 23

5-2 Adjustment of bias trap coil

With the TAPE SELECT switch in METAL position, set a tape in recording mode. Adjust the trap coils L104 and 204 to obtain a minimum voltage at the check point BIAS TRAP.

5-3 Adjustment of record/play frequency response

With the TAPE SELECT switch in CrO₂ position, load a test tape C-60 (MAXELL XL-II) and record 1 kHz and 8 kHz signals respectively at output level of -20VU (input level: about -43dB). Adjust Vr107 and 207 so that the 8 kHz signal output is about equal to the 1 kHz signal output. Check to make sure that the overall frequency response is within the range shown in Fig. 24.

* When the 8 kHz output is larger than the 1 kHz output, turn Vr107 and 207 clockwise, and vice versa.

5-4 Adjustment of record/play level

With the TAPE SELECT switch in CrO₂ position, load a test tape (MAXELL-XL-II). Record the 400 Hz signal at output level of -10 VU (input level: about -31dB). Adjust Vr106 and 206 so that the same output level can be obtained at the SOURCE and TAPE positions of the MONITOR switch.

(With the above adjustment, output levels at other tape positions are automatically adjusted.)

* Beat noise

If the tape deck is used near an AM tuner, a beat noise may be heard in recording. Place the tape deck away from the AM tuner.

Overall frequency response

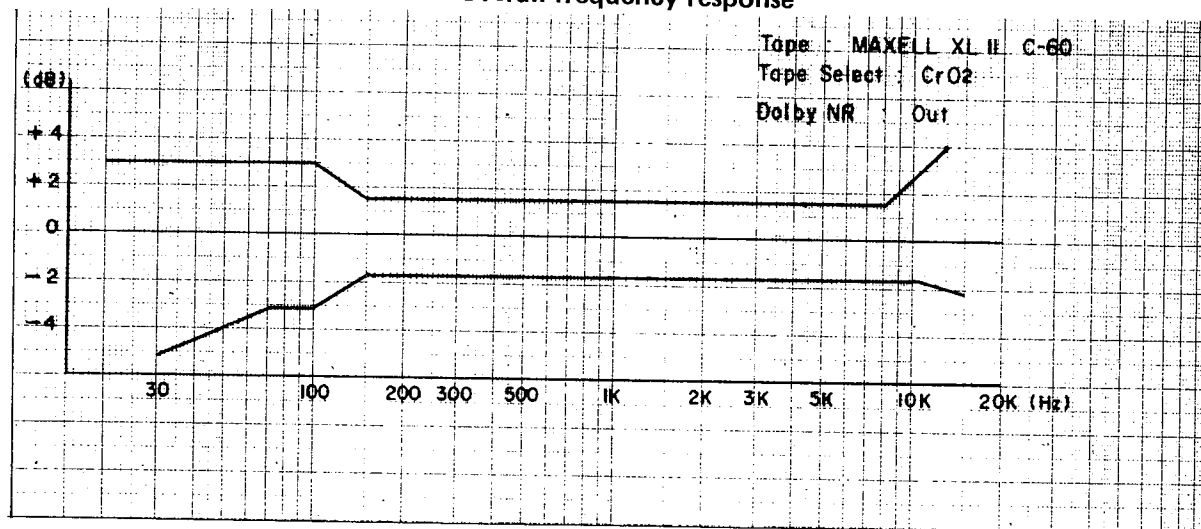


Fig. 24

PARTS LIST

KU-365H AUDIO AMP UNIT

Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTOR GROUP			
IC305	2620325008	BA335	
IC101, 201	2630065015	TA7136AP	
IC306	2630092004	LB1416	
IC103, 203	2630096000	HA11226	
IC302	2630125007	μ PC4557	
JC101, 202, 301, 303, 304	2630126006	μ PC4558	
TR306	2710105002	2SA966Y	
TR310	2730021030	2SC458C	
TR304, 305	2730111050	2SC1213AC	
TR309	2730195005	2SC2060Q	
TR101~103, 201~203, 301~303, 307, 308, 311	2730204019	2SC2320F	
D101, 104, 201, 204	2760001004	1N34A	
D103, 203	2760002003	1N60	
D102, 105~107, 202, 205, 206, 303, 304	2760049008	1S2076	
ZD301	2760053007	HZ12A	
ZD302	2760244007	MZ303A	
SA101, 201, 301	2760118007	D33A	
RESISTOR GROUP			
R338	2412048001	RD14B2E150J	Carbon film 15 Ω J $\frac{1}{4}$ W
R321, 322	2412056006	RD14B2E330J	33 Ω J $\frac{1}{4}$ W
R334, 335	2412058004	RD14B2E390J	39 Ω J $\frac{1}{4}$ W
R137, 237	2412068007	RD14B2E101J	100 Ω J $\frac{1}{4}$ W
R132, 232	2412070008	RD14B2E121J	120 Ω J $\frac{1}{4}$ W
R105, 205, 163, 263, 323	2412072006	RD14B2E151J	150 Ω J $\frac{1}{4}$ W
R123, 223, 150, 250	2413074004	RD14B2E181J	180 Ω J $\frac{1}{4}$ W
R302	2412076002	RD14B2E221J	220 Ω J $\frac{1}{4}$ W
R305, 310	2412078000	RD14B2E271J	270 Ω J $\frac{1}{4}$ W
R336	2412080001	RD14B2E331J	330 Ω J $\frac{1}{4}$ W
R324	2412082009	RD14B2E391J	390 Ω J $\frac{1}{4}$ W
R147, 247	2412085006	RD14B2E511J	510 Ω J $\frac{1}{4}$ W
R304	2412086005	RD14B2E561J	560 Ω J $\frac{1}{4}$ W
R303	2412088003	RD14B2E681J	680 Ω J $\frac{1}{4}$ W
R342	2412090004	RD14B2E821J	820 Ω J $\frac{1}{4}$ W
R138, 238, 319	2412092002	RD14B2E102J	1K Ω J $\frac{1}{4}$ W
R140, 240	2412096008	RD14B2E152J	1.5K Ω J $\frac{1}{4}$ W
R136, 236	2412100004	RD14B2E222J	2.2K Ω J $\frac{1}{4}$ W
R146, 246, 173, 273	2412101003	RD14B2E242J	2.4K Ω J $\frac{1}{4}$ W
R118, 218 161, 261, 164, 264	2412102002	RD14B2E272J	2.7K Ω J $\frac{1}{4}$ W
R333, 343, 308	2412104000	RD14B2E332J	3.3K Ω J $\frac{1}{4}$ W
R317	2412106008	RD14B2E392J	3.9K Ω J $\frac{1}{4}$ W

Ref. No.	Part No.	Part Name	Remarks
R156, 256, 170, 270, 307, 328, 312, 325	2412108006	RD14B2E472J	4.7K Ω J $\frac{1}{4}$ W
R167, 267, 168, 268	2412109005	RD14B2E512J	5.1K Ω J $\frac{1}{4}$ W
R111, 211, 121, 221, 149, 249, 166, 266, 314, 330	2412110007	RD14B2E562J	5.6K Ω J $\frac{1}{4}$ W
R159, 259	2412112005	RD14B2E682J	6.8K Ω J $\frac{1}{4}$ W
R169, 269	2412115002	RD14B2E912J	9.1K Ω J $\frac{1}{4}$ W
R109, 209, 160, 260, 171, 271, 301, 320, 344, 345	2412116001	RD14B2E103J	10K Ω J $\frac{1}{4}$ W
R126, 226, 148, 248, 153, 253, 326, 341	2412118009	RD14B2E123J	12K Ω J $\frac{1}{4}$ W
R110, 210	2412119008	RD14B2E133J	13K Ω J $\frac{1}{4}$ W
R113, 213, 144, 244, 165, 265, 162, 262, 340	2412120000	RD14B2E153J	15K Ω J $\frac{1}{4}$ W
R130, 230, 172, 272, 315	2412122008	RD14B2E183J	18K Ω J $\frac{1}{4}$ W
R107, 207, 116, 216, 142, 242, 331, 332	2412124006	RD14B2E223J	22K Ω J $\frac{1}{4}$ W
R108, 208	2412126004	RD14B2E273J	27K Ω J $\frac{1}{4}$ W
R131, 231, 327	2412128002	RD14B2E333J	33K Ω J $\frac{1}{4}$ W
R101, 201, 157, 257, 318	2412130003	RD14B2E393J	39K Ω J $\frac{1}{4}$ W
R124, 224, 129, 229, 134, 234, 135, 235, 151, 251, 339	2412132001	RD14B2E473J	47K Ω J $\frac{1}{4}$ W
R115, 215, 117, 217, 145, 245, 329	2412134009	RD14B2E563J	56K Ω J $\frac{1}{4}$ W
R133, 233, 158, 258	2412136007	RD14B2E683J	68K Ω J $\frac{1}{4}$ W
R311	2412139004	RD14B2E913J	91K Ω J $\frac{1}{4}$ W
R122, 222, 139, 239, 112, 212, 313, 316	2412140006	RD14B2E104J	100K Ω J $\frac{1}{4}$ W
R127, 227, 128, 228, 154, 254, 155, 255, 306	2412150009	RD14B2E274J	270K Ω J $\frac{1}{4}$ W

Ref. No.	Part No.	Part Name	Remarks
R143, 243, 102, 202, 103, 203, 141, 241	2412152007	RD14B2E334J	330KΩJ ¼W
R114, 214, 174, 274	2412158001	RD14B2E564J	560KΩJ ¼W
R106, 206	2412162000	RD14B2E824J	820KΩJ ¼W
R337	2410159002	RD12B2H820J	82ΩJ ¼W
R119, 219, 120, 220	2410169005	RD12B2H221J	220ΩJ ¼W
R125, 225, 152, 252	2452197006	RN14K2E392F	Metal film 3.9KΩF ¼W
Vr101, 201	EP-5462H7	SOLID VOLUME	1KΩ
Vr302	EP-5462H11	SOLID VOLUME	4.7KΩ
Vr103, 203	EP-5462H13	SOLID VOLUME	10KΩ
Vr102, 202, 106, 206	EP-5462H17	SOLID VOLUME	47KΩ
Vr301	EP-5462H18	SOLID VOLUME	68KΩ
Vr107, 207	EP-5462H20	SOLID VOLUME	150KΩ
Vr105, 205	EP-5462H22	SOLID VOLUME	330KΩ
VR301	2118047005	V1620V25KA103	10KΩ
VR302	2118040112	V1611V25KA503	50KΩ

CAPACITOR GROUP

C308	2544004007	CE04W0J221=	Electrolytic 220μF 6.3V
C105, 205, 127, 227, 155, 255, 126, 226	2544009002	CE04W1A470=	47μF 10V
C109, 209, 111, 211, 112, 212, 115, 215, 122, 222, 123, 223, 140, 240, 143, 243, 158, 258, 159, 259, 129, 229, 130, 230, 131, 231, 132, 232, 139, 239, 315, 320	2544015009	CE04W1C100=	10μF 16V
C316	2544016008	CE04W1C330=	33μF 16V
C113, 213, 114, 214, 303, 304	2544017007	CE04W1C470=	47μF 16V
C301, 321	2544019005	CE04W1C221	220μF 16V
C120, 220, 137, 237, 305	2549014021	CE04W1HR33M	0.33μF 50V
C302, 306, 319	2549014021	CE04W1H010=	1μF 50V
C307, 314	2544034006	CE04W1V4R7=	4.7μF 35V
C313	2544035005	CE04W1V100=	10μF 35V
C116, 216, 133, 233	2543014027	CE04D1C100MBP	10μFBP 16V
C125, 225, 142, 242	2545007003	CA92F1CR33M	0.33μF 16V
C107, 207	2533603008	CC45SL1H100D	Ceramic 10PF 50V
C102, 202	2533620007	CC45SL1H510J	51PF 50V
C128, 228	2533625002	CC45SL1H820J	82PF 50V
C156, 256, 161, 261	2533657009	CC45SL1H101K	100PF 50V

Ref. No.	Part No.	Part Name	Remarks
C101, 201	2533631009	CC45SL1H151K	150PF 50V
C144, 244	2533643000	CC45SL1H471J	470PF 50V
C160, 260	2533658008	CK45SL1H121K	120PF 50V
C157, 257	2531055056	CK45B1H221K	220PF 50V
C146, 246	2551060005	CQ93M1H102K	Film 0.001μF 50V
C311	2551064001	CQ93M1H222K	0.0022μF 50V
C106, 206, 151, 251	2551065000	CQ93M1H272K	0.0027μF 50V
C148, 248	2551066009	CQ93M1H332K	0.0033μF 50V
C118, 218, 135, 235	2551120084	CQ93M1H472J	0.0047μF 50V
C110, 210, 312	2551068007	CQ93M1H472K	0.0047μF 50V
C153, 253	2551069006	CQ93M1H562K	0.0056μF 50V
C310	2551070008	CQ93M1H682K	0.0068μF 50V
C152, 252	2551121009	CQ93M1H682J	0.0068μF 50V
C147, 247	2551072006	CQ93M1H103K	0.01μF 50V
C145, 245, 317, 318, 150, 250	2551073005	CQ93M1H123K	0.012μF 50V
C117, 217, 119, 219, 134, 234, 136, 236	2551121041	CQ93M1H153J	0.015μF 50V
C149, 249	2551076002	CQ93M1H223K	0.022μF 50V
C154, 254	2551078000	CQ93M1H333K	0.033μF 50V
C108, 208	2551080001	CQ93M1H473K	0.047μF 50V
C121, 221, 124, 224, 138, 238, 141, 241	2551084007	CQ93M1H104K	0.1μF 50V
C309	2554036007	CQ93P2J332K	0.0033μF 630V

OTHER PARTS GROUP

L104, 204	2310802103	TRAP COIL	
L101, 201	2310818003	TRAP FILTER	
L102, 202	2328036000	MPX FILTER	
L103, 203	TRT094436	INDUCTOR	
T301	2310806002	OSC COIL	
RL301	2140020003	REED RELAY	
S303	2123321004	SELECTOR SWITCH	
S301, 302	2129133005	PUSH SWITCH	
	2049616000	MIC JACK	
	2049625004	HEAD PHONE JACK	
	2048021007	4P CONNECTOR BASE	
	2228357106	AUDIO P.W. BOARD	
	2032075001	2P CONNECTOR BASE	
	2035622008	3P MINI CONNE. PIN	
	2035622024	4P MINI CONNE. PIN	
	EP-5667H2	WRAPPING PIN	

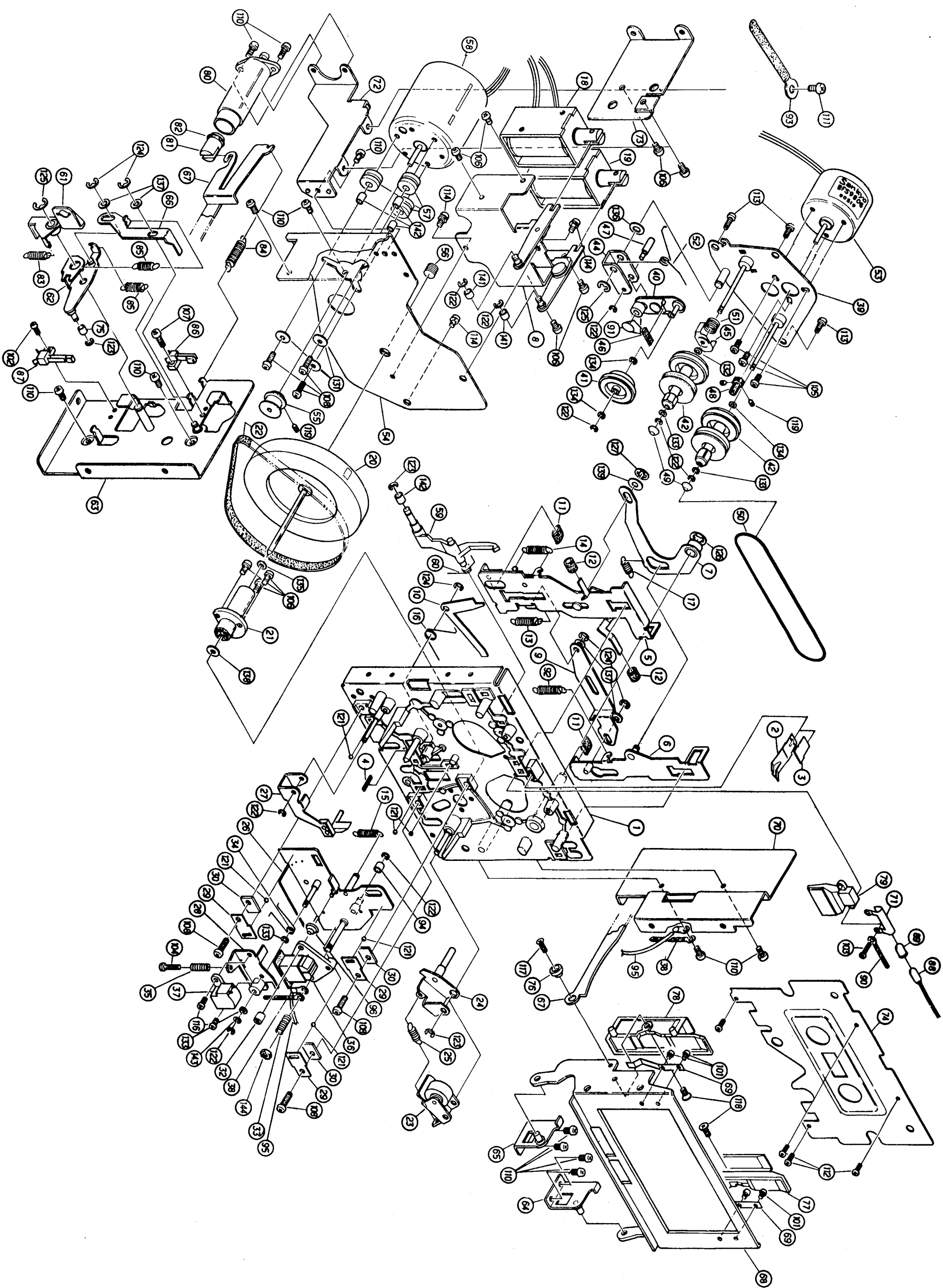
PARTS LIST

KU-378H LOGIC AND POWER UNIT

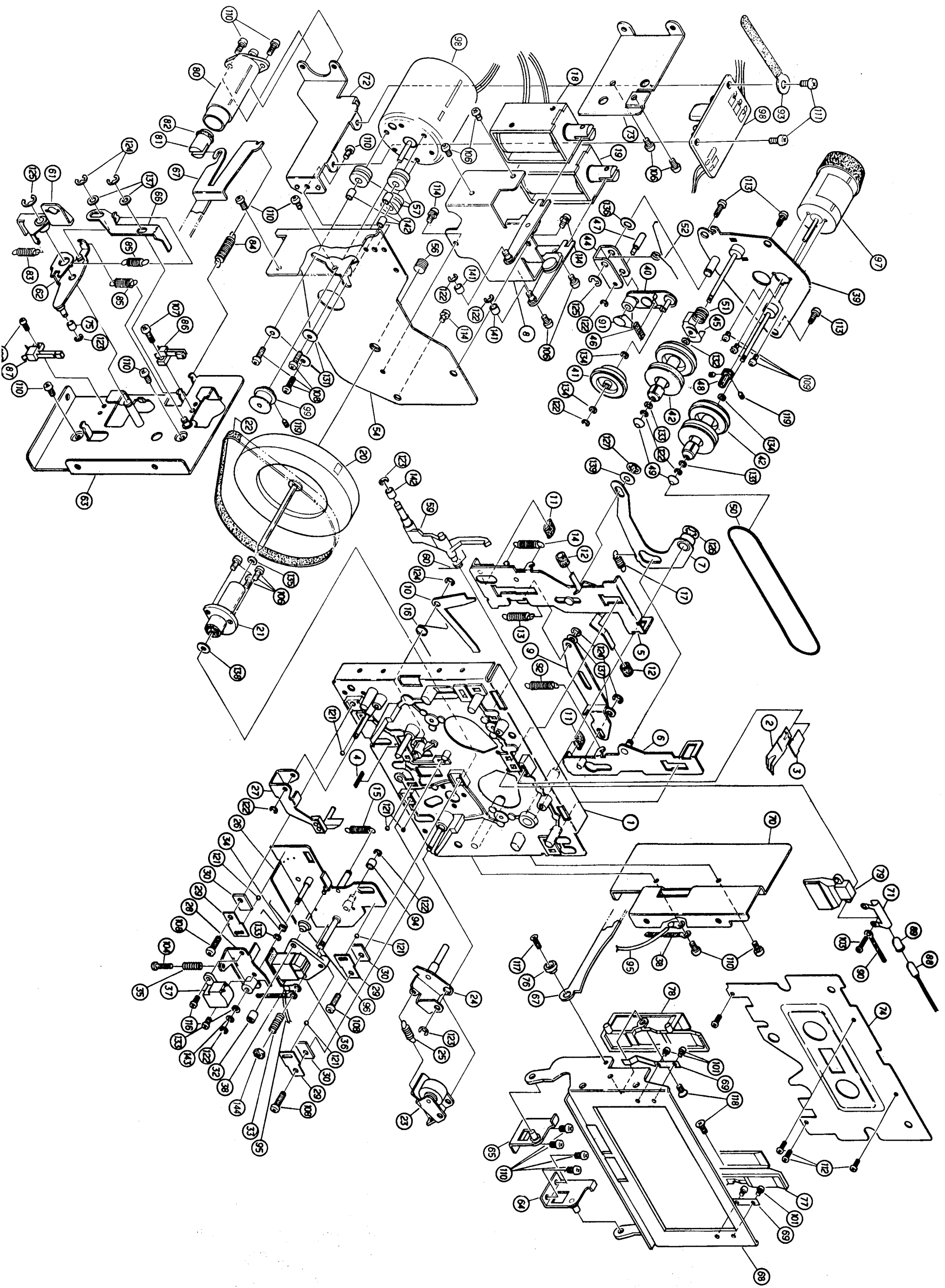
Ref. No.	Part No.	Part Name	Remarks
SEMICONDUCTOR GROUP			
IC4	2620327006	HD74LS00P	HALL IC
IC2	2620128001	HD74LS02P	
IC7	2620129013	HD74LS04P	
IC3	2620291006	HD74LS08P	
IC5	2620328005	HD74LS10P	
IC6	2620294003	HD74LS32P	
IC1	2620283001	BA843	
IC8	2630076004	HA17901P	
IC901	2630139006	μPC78M12H	
IC9	2680028002	DN-6838	
TR4, 7, 9, 10, 14, 902, 903	2710102005	2SA1015Y	
TR901	2720055029	2SB772(Q/P)	
TR1~3, 5, 6, 8, 12, 13, 15~17, 19	2730204019	2SC2320F	
TR11	2740078031	2SD882(Q/P)	
D1~30	2760049008	1S2076	
D901, 902	2760246005	RB152	
ZD1	2760173026	HZ6B	
RESISTOR GROUP			
R1, 3~6	2412044005	RD14B2E100J	Carbon film 10ΩJ ¼W
R2, 7, 8, 36	2412068007	RD14B2E101J	100ΩJ ¼W
R30	2412072006	RD14B2E151J	150ΩJ ¼W
R29	2412074004	RD14B2E181J	180ΩJ ¼W
R79	2412076002	RD14B2E221J	220ΩJ ¼W
R22	2412084007	RD14B2E471J	470ΩJ ¼W
R24, 42	2412086005	RD14B2E561J	560ΩJ ¼W
R35	2412090004	RD14B2E821J	820ΩJ ¼W
R13, 21, 23, 27, 31, 34	2412092002	RD14B2E102J	1KΩJ ¼W
R33, 40, 44	2412100004	RD14B2E222J	2.2KΩJ ¼W
R76, 77	2412104000	RD14B2E332J	3.3KΩJ ¼W
R11, 12, 14, 20, 25, 32, 37, 45, 50, 55, 60, 63, 67, 72, 78, 904, 905	2412108006	RD14B2E472J	4.7KΩJ ¼W
R43	2412110007	RD14B2E562J	5.6KΩJ ¼W
R901, 902	2412112005	RD14B2E682J	6.8KΩJ ¼W
R39	2412114003	RD14B2E822J	8.2KΩJ ¼W
R18, 19, 26, 28, 38, 41, 51	2412216001	RD14B2E103J	10KΩJ ¼W
R64, 65	2412120000	RD14B2E153J	15KΩJ ¼W
R61, 62, 66	2412124006	RD14B2E223J	22KΩJ ¼W
R9, 10	2412128002	RD14B2E333J	33KΩJ ¼W
R16, 17, 57	2412130003	RD14B2E393J	39KΩJ ¼W
R52~54, 58, 59, 70	2412132001	RD14B2E473J	47KΩJ ¼W
R49, 69, 903	2412134009	RD14B2E563J	56KΩJ ¼W
R71	2412136007	RD14B2E683J	68KΩJ ¼W
R68	2412138005	RD14B2E823J	82KΩJ ¼W
R46~48, 56	2412140006	RD14B2E104J	100KΩJ ¼W
			Metal oxide
R906, 907	2440025025	RS14B3A470JNBF	47ΩJ 1W

Ref. No.	Part No.	Part Name	Remark
CAPACITOR GROUP			
C11, 18, 19	2544009002	CE04W1A470=	Electrolytic 47μF 10V
C25	2544010004	CE04W1A101=	100μF 10V
C16, 21, 904	2544015009	CE04W1C100=	10μF 16V
C14, 17, 26	2544054002	CE04W1C220=	22μF 16V
C12	2544016008	CE04W1C330=	33μF 16V
C905, 906	2544021006	CE04W1C471	470μF 16V
C901, 902, 907, 908	2544032008	CE04W1E102	1000μF 25V
C27	2544043000	CE04W1HR47=	0.47μF 50V
C13	2544044009	CE04W1H010=	1μF 50V
C10, 15, 20, 22~24	2544034006	CE04W1V4R7=	4.7μF 35V
Film			
C7, 8	2551072006	CQ93M1H103K	0.01μF 50V
C9	2551076002	CQ93M1H223K	0.022μF 50V
OTHER PARTS GROUP			
	2228304201	LOGIC & POWER P.W.B.	
	4178028004	HEAT SINK	
	4178046002	HEAT SINK(Z)	
	1038143006	HALL IC GUIDE	
	2035622066	5P MINI CONNE. PIN	
	2035622095	9P MINI CONNE. PIN	
	2050082021	2P WRAPPING TERMINAL	
	2050082034	3P WRAPPING TERMINAL	
	2050082047	4P WRAPPING TERMINAL	
	2058007008	BOARD IN TERMINAL	

EXPLODED VIEW OF MECHANISM UNIT (DR-320)



EXPLODED VIEW OF MECHANISM UNIT (DR-330)



PARTS LIST OF MECHANISM UNIT

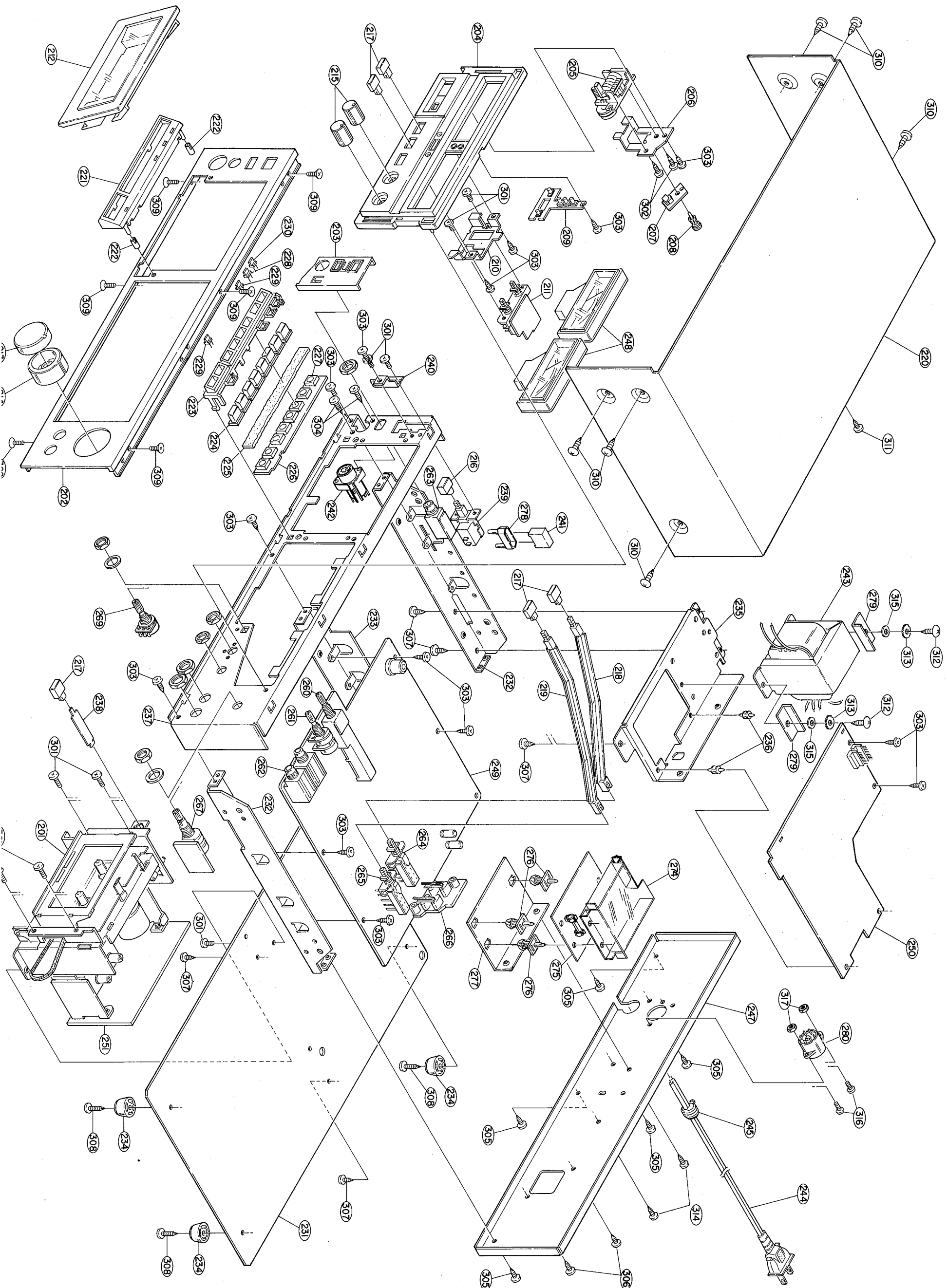
Ref. No.	Part No.	Part Name	Remark
1	9J250101	MECH. CHASSIS ASS'Y	DR-320 model only
2	9J250112	C. SUPPORT SPRING	
3	9J250113	SPRING PLATE	
4	9J250131	FELT	
5	9J250201	SLIDE BRACKET ASS'Y	
6	9J250202	SLIDE LEVER ASS'Y	
7	9J250203	BRAKE LEVER ASS'Y	
8	9J250204	SOLENOID BRACKET ASS'Y	
9	9J250215	CONNECTING LEVER	
10	9J250217	CUE LEVER	
11	9J250272	SIDE STOPPER	DR-320 model only
12	9J250273	BRAKE SHOE	
13	9J250281	SPRING	
14	9J250282	SPRING	
15	9J250283	SPRING	
16	9J250284	TORSION SPRING	
17	9J250285	BRAKE SPRING	
18	9J250291	SOLENOID	
19	9J250292	SOLENOID	
20	9J250301	FLYWHEEL ASS'Y	
21	9J180302	BEARING ASS'Y	DR-330 model only
22	9J180372	MAIN BELT	
23	9J250401	P. ROLLER BRACKET ASS'Y	
24	9J250402	PRESSURE BRACKET ASS'Y	
25	9J250481	P. ROLLER SPRING	
26	9J250501	HEAD PLATE ASS'Y	
27	9J250502	DETECTING ARM ASS'Y	
28	9J250503	E. HEAD BRACKET ASS'Y	
29	9J250514	SPRING PLATE	
30	9J250515	BRACKET	
31			DR-330 model only
32	9J250553	ADJUST SCREW	
33	9J250581	H. SUPPORT SPRING	
34	9J250582	TORSION SPRING	
35	9J250583	ADJUST SPRING	
36	3918030004	R/P HEAD ASS'Y	
37	3918031003	E. HEAD	
38	9J250597	LUG	
39	9J250701	REEL BASE ASS'Y	
40	9J250702	F.R. LEVER ASS'Y	
41	9J250705	F.R. IDLER	DR-320 model only
42	9J250703	TAKE UP REEL ASS'Y	
43			
44	9J250712	F.R. BRACKET	
45	9J250721	SPRING SUPPORT	
46	9J250731	FELT	
47	9J250745	F.R. BRACKET PIN	
48	9J250754	REEL MOTOR PULLEY	
49	9J010761	REEL CAP	
50	9J141071	COUNTER BELT	DR-320 model only
51	9J250781	SUPPLY SPRING	
52	9J250782	TORSION SPRING	
53	2178050100	REEL MOTOR	
54	9J251211	MOTOR BRACKET	
55	9J251251	MOTOR PULLEY	
56	9J130361	THRUST SCREW	
57	9J151274	MOTOR CUSHION	
58	2178049108	CAPSTAN MOTOR	
59	9J251301	REC LEVER ASS'Y	
60	9J251381	TORSION SPRING	DR-320 model only
61	9J251701	EJECT LEVER ASS'Y	
62	9J251702	LOCK LEVER ASS'Y	
63	9J251703	SIDE BRACKET (L) ASS'Y	
64	9J181704	HINGE (R) ASS'Y	
65	9J181705	HINGE (L) ASS'Y	
66	9J251713	SLIDE LEVER	
67	9J251715	DAMPER ARM	
68	9J251716	CASSETTE BOX	
69	9J251717	C' PRESSURE SPRING	
70	9J251719	SIDE BRACKET (R)	DR-320 model only
71	9J251110	LAMP BRACKET	
72	9J2517111	DAMPER BRACKET	

Ref. No.	Part No.	Part Name	Remark
73	9J2517112	P.W.B. HOLDER	DR-320 model only
74	9J251721	ESC PLATE	
75	9J251752	ROLLER	
76	9J251753	BOSS	
77	9J251761	CASSETTE HOLDER (R)	
78	9J251762	CASSETTE HOLDER (L)	
79	9J251763	LAMP LENS	
80	9J201761	DAMPER CYLINDER	
81	9J201762	DAMPER PISTON	
82	9J201771	O RING	
83	9J251781	EJECT LEVER SPRING	DR-320 model only
84	9J251782	DAMPER SPRING	
85	9J540P20	LOCK LEVER SPRING	
86	9J251791	SWITCH	
87	9J251792	SWITCH	
88	9J251793	LAMP	
89	9J251799	LAMP COVER	
90	9J11140301	LUG	
91	9J250783	TORSION SPRING	
92	9J250286	SPRING	DR-330 model only
93	9J251795	LUG	
94	9J250569	CALLER	
95	9J250598	WIRE ASS'Y	
96	9J250585	SPRING	
97	2178058005	REEL MOTOR	
98	2178052001	CAPSTAN MOTOR	
99	9J251252	MOTOR PULLEY	
100			
101	9JDRF101	SCPMs 2002	DR-330 model only
102	4711101016	2 x 4 CPS	
103	9JDRF103	SCPMs 2007	
104	4711810006	2 x 10 CPS	
105	9JDRF 105	SCPMs 2603	
106	4711201013	2.6 x 4 CPS	
107	4211202012	2.6 x 5 CPS	
108	4711204010	2.6 x 8 CPS	
109	9JDRF 109	2 x 3 CPS	
110	9JDRF110	SCPTs 2605	
111	9JDRF111	3 x 6 FT	DR-330 model only
112	9JDRF112	SCPTB 2006	
113	4733800007	3 x 6 CBTS	
114	4700001004	2.6 x 4 CPS (SW)	
115	4700003002	2.6 x 6 CPS (SW)	
116	4714102012	2 x 5 CTS	
117	4712102014	2 x 5 CFS	
118	9JDRF118	BCFMS 2604	
119	9JDRF119	SSNSs 2002	
120			
121	9JDRF121	SSB020000	DR-320 model only
122	4761000002	1.5E RING	
123	9JDRF123	E1R900000	
124	9JDRF124	E2R300000	
125	4761003009	3E RING	
126	4761004008	4E RING	
127	9JDRF127	STOP RING	
128			
129			
130			
131	9JDRF131	SFW261030	DR-320 model only
132	9JDRF132	GNW200413	
133	9JDRF133	GNW200425	
134	9JDRF134	GNW200450	
135	9JDRF135	GNW260550	
136	9JDRF136	GNW401050	
137	9JDRF137	NYW300550	
138	9JDRF138	NYW240650	
139	9JDRF139	WASHER	
140			
141	9JDRF141	SSP304035	DR-320 model only
142	9JDRF142	SSP304060	
143	9JDRF143	SFW204030	
144	4756006008	3 NUT	

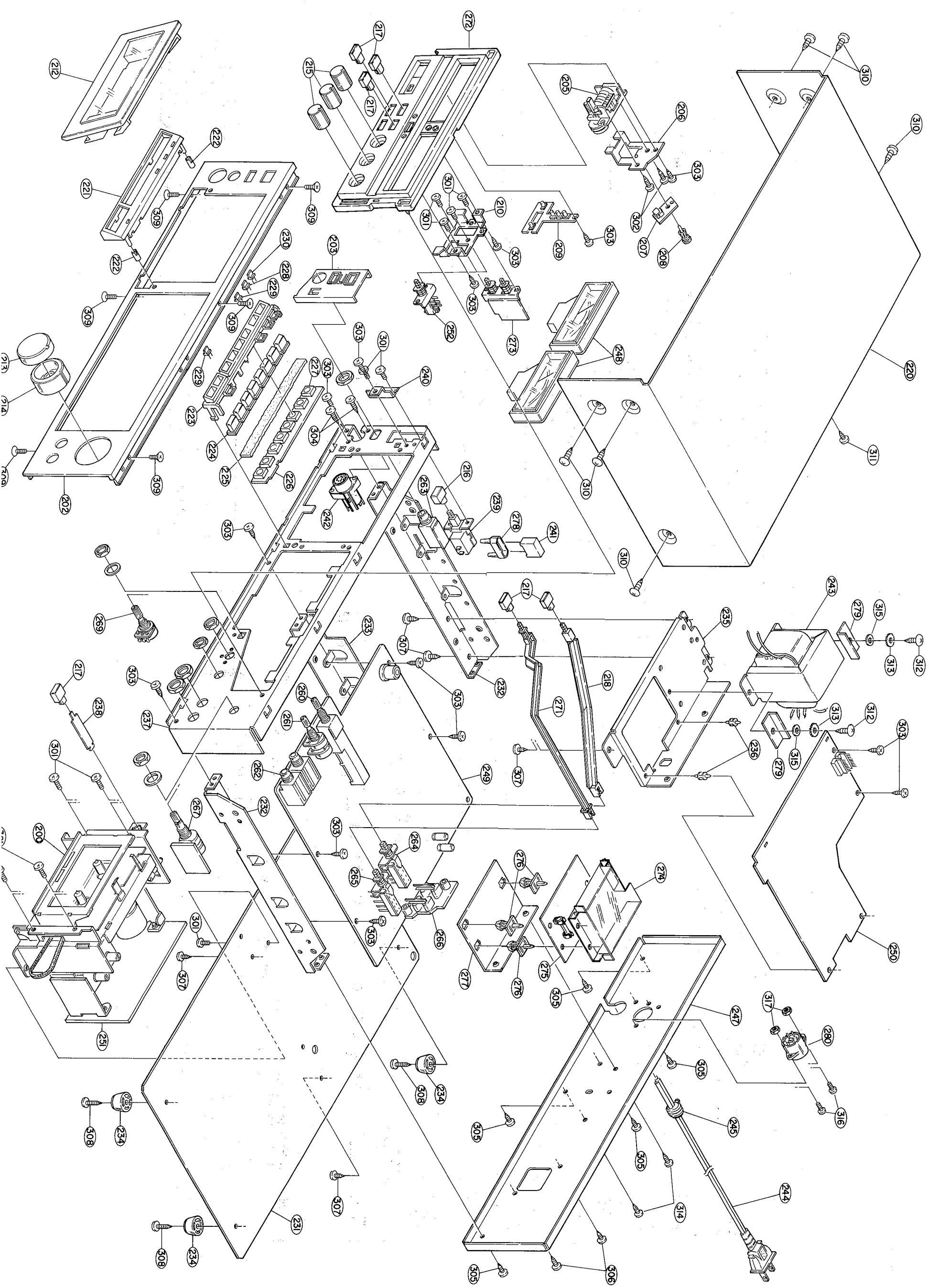
PARTS LIST OF EXPLODED VIEW

Ref. No.	Part No.	Part Name	Remark
200	3388006008	V.MECH.[22] UNIT	DR-330 model only
201	3388005009	V.MECH.[21] UNIT	
202	1028206005	FRONT PANEL	
203	1038130200	KNOB GUIDE	
204	1038149000	FRONT ESC.	
205	4598007304	COUNTER	
206	4418567209	COUNTER BRACKET	
207	KU-0378	LOGIC & POWER UNIT	
208	4498005008	CANOE RIVET	
209	KU0380	PEAK INDICATOR UNIT	
210	4418568208	SWITCH BRACKET	DR-320 model only
211	KU-0374	TIMER P.W.B. UNIT	
212	1038154008	DOOR FRAME ASS'Y	
213	1128065007	V. KNOB (A) ASS'Y	
214	1128066103	V. KNOB (B) ASS'Y	
215	1128067005	V. KNOB (C) ASS'Y	
216	1138106105	POWER SW KNOB ASS'Y	
217	1138107201	PUSH KNOB	
218	4318056108	PUSH LEVER (D)	
219	4318059105	PUSH LEVER (F)	
220	1028137307	TOP COVER ASS'Y	DR-320 model only
221	1038153009	BUTTON ESC.	
222	4770196004	PUSH NUT	
223	1038121303	BUTTON GUIDE	
224	1038122205	CONTROL BUTTON	
225	4618088009	CUSHION	
226	2228301107	CONTROL BUTTON BOARD	
227	2129130008	PUSH SWITCH	
228	3939094003	LED	
229	3939095002	LED	
230	3939096001	LED	DR-330 model only
231	1058055307	BOTTOM PLATE	
232	4118144207	ANGLE	
233	4118144210	ANGLE	
234	MD-5268	FOOT	
235	4128225404	TRANS BRACKET	
236	4128464003	TRANS BRACKET ASS'Y	
237	4158026000	P.W.B. SUPPORT	
238	4318053101	FRONT CHASSIS	
239	2129136028	EJECT PLATE	
240	2129136015	POWER SWITCH	American model only
241	4418571101	BRACKET	
242	2049624306	SPARK KILLER	
243	2339039106	POWER TRANS	
244	2339040108	POWER TRANS	
245	2339040111	POWER TRANS	
246	2339042009	POWER TRANS	
247	2062019008	AC CORD WITH PLUG	
248	2062024006	AC CORD WITH LABEL	
249	2006031026	AC CORD WITH PLUG	
250			Multi-voltage models only
251			
252			
253			
254			
255			
256			
257			
258			
259			
260	2123321004	SELECTOR SWITCH	DR-330 model only
261	2118047005	V1620V25KA103	
262	2049616000	MIC JACK	
263	2049625004	HEAD PHONE JACK	
264	2129133005	PUSH SWITCH	
265	2129133005	PUSH SWITCH	
266	2048021007	4P CONNECTOR BASE	
267	2118040112	V1611V25KA503	
268			
269	2118051004	V16N25KB203	
270	4318057204	PUSH LEVER (E)	DR-330 model only
271	1038150002	FRONT ESC.	
272	KU-0375	TIMER P.W.B. UNIT	
273	4158023603	PS UNIT COVER	
274	KU-333-1	P.C.B. SUPPORT	
275	4150089003	P.C.B. BRACKET	
276	4418442308	CONDENSER COVER	
277	4158006004	FIXING BRACKET	
278	4418748002		
279			
280	2123315023	VOLTAGE SELECTOR	Multi-voltage models only
301	4713303016	3 x 6 CBS	
302	4730253013	2.6 x 6 CBTS	
303	4733800007	3 x 6 CBTS	
304	4733800010	3 x 8 CBTS	
305	4730353023	3 x 6 CBRTS	
306	4730304030	3 x 8 CBRTS	
307	4730453017	4 x 6 CBRTS	
308	4730456014	4 x 12 CBRTS	
309	4712303017	3 x 6 CFS	
310	4734801005	4 x 8 CTS	Multi-voltage models only
311	4770064107	FIXING SCREW	
312	4739013018	4 x 6 CPTS (FT)	
313	4739014017	4 x 8 CPTS (FT)	
314	4713303032	3 x 6 CBS (BLACK)	
315	4751105014	4 WASHER	
316	4713203035	2.6 x 6 CBS	
317	4756004000	2.6N	

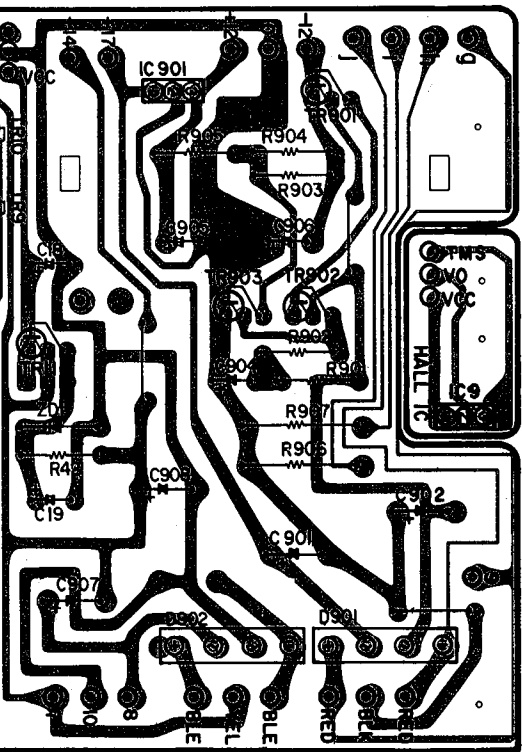
EXPLODED VIEW OF MODEL DR-320



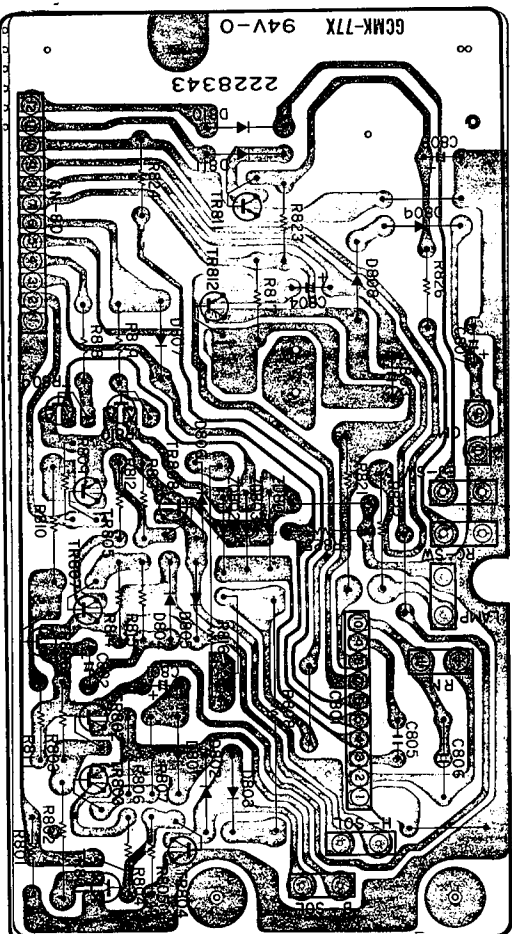
EXPLODED VIEW OF MODEL DR-330



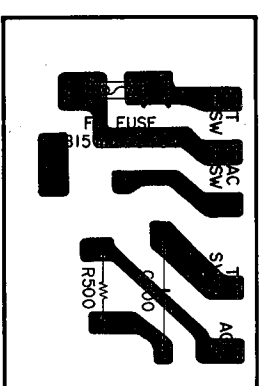
KU-378H LOGIC & POWER UNIT



KU-379H DRIVER UNIT

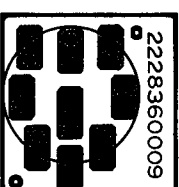
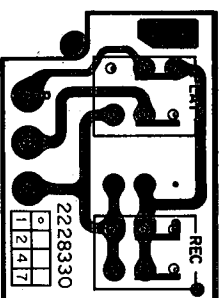


KU-333-1
POWER WIRING UNIT

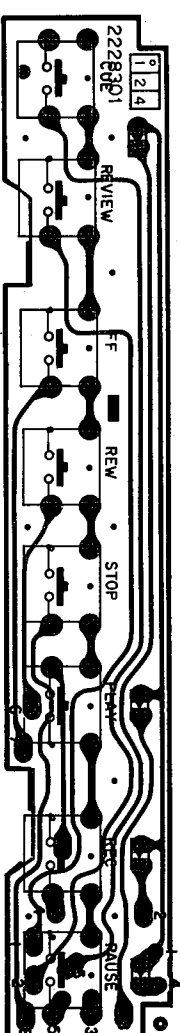


REMOCON JACK P. W. B

KU-374 TIMER UNIT
KU-375 TIMER UNIT



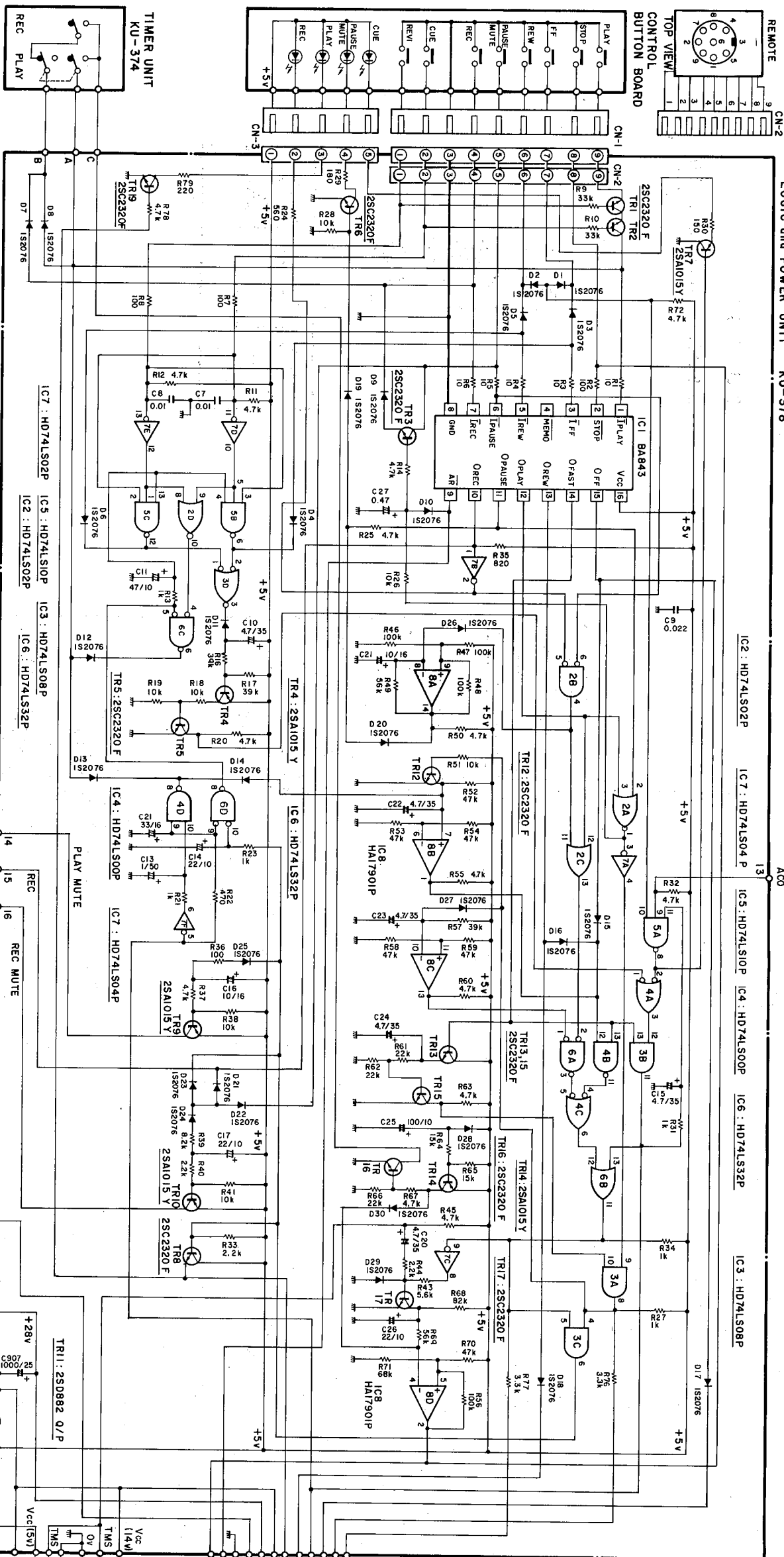
CONTROL BUTTON BOARD



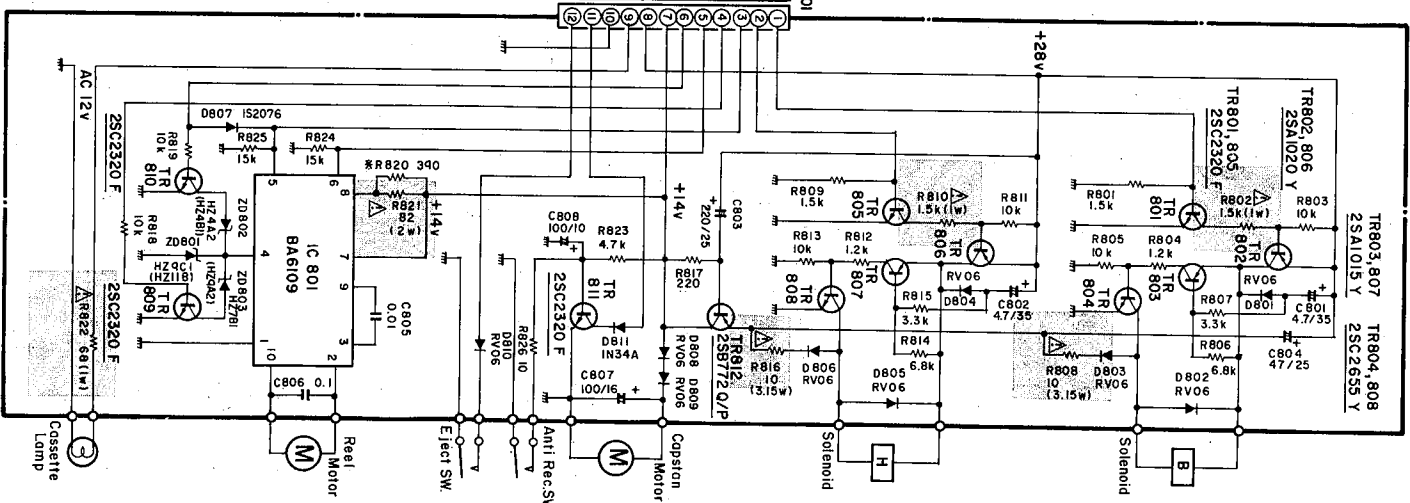
SCHEMATIC DIAGRAM OF MECHANISM CONTROL UNIT

LOGIC and POWER UNIT KU-378

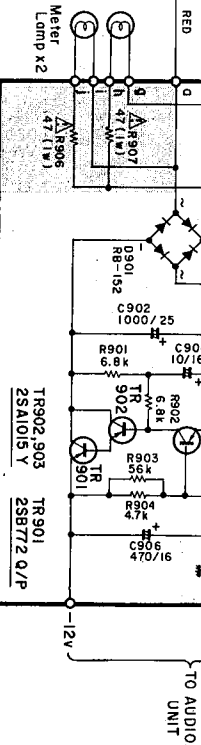
TO AUDIO UNIT
ACO



DRIVER UNIT KU-379

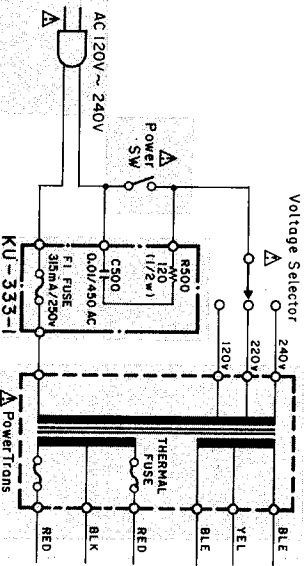


Note: 1. R820 with * mark is not used in DR-320. 2. Part names in parenthesis () of ZD801, 802 and 803 are only for DR-320.

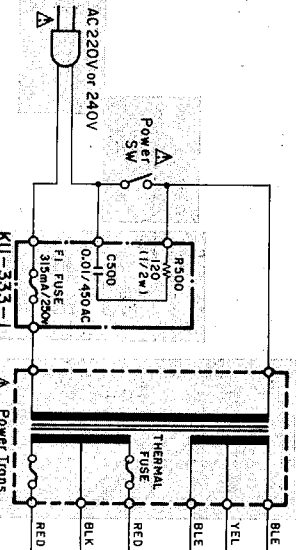


Note: Resistance shall be 1/4W unless otherwise specified and the unit is Ω.

- The unit of capacitor is μF, pF unless otherwise specified.
- Parts marked with Δ are of importance in respect to the safety, use the specified type without fail.
- The voltage values are measured using the circuit tester (DC: 100 kΩ/V).
- This circuit diagram shows the basic circuit. It is subject to

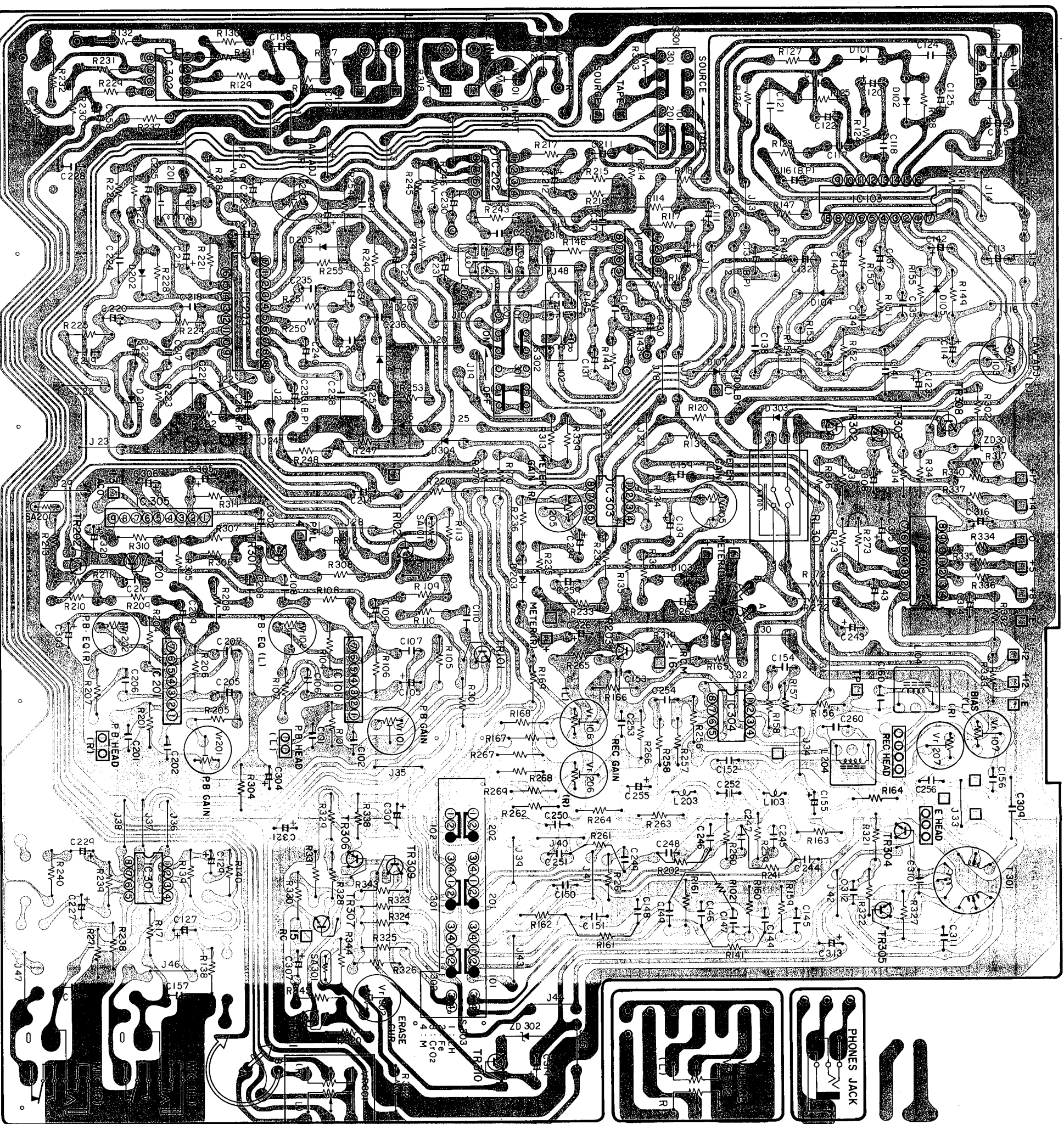


• Multi voltage models.

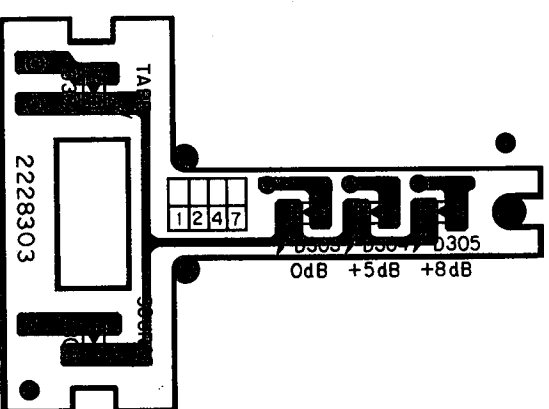


• American models.

• European models.



KU-380
PEAK INDICATOR
UNIT



PB EQ AMP
IC101: TA7136AP

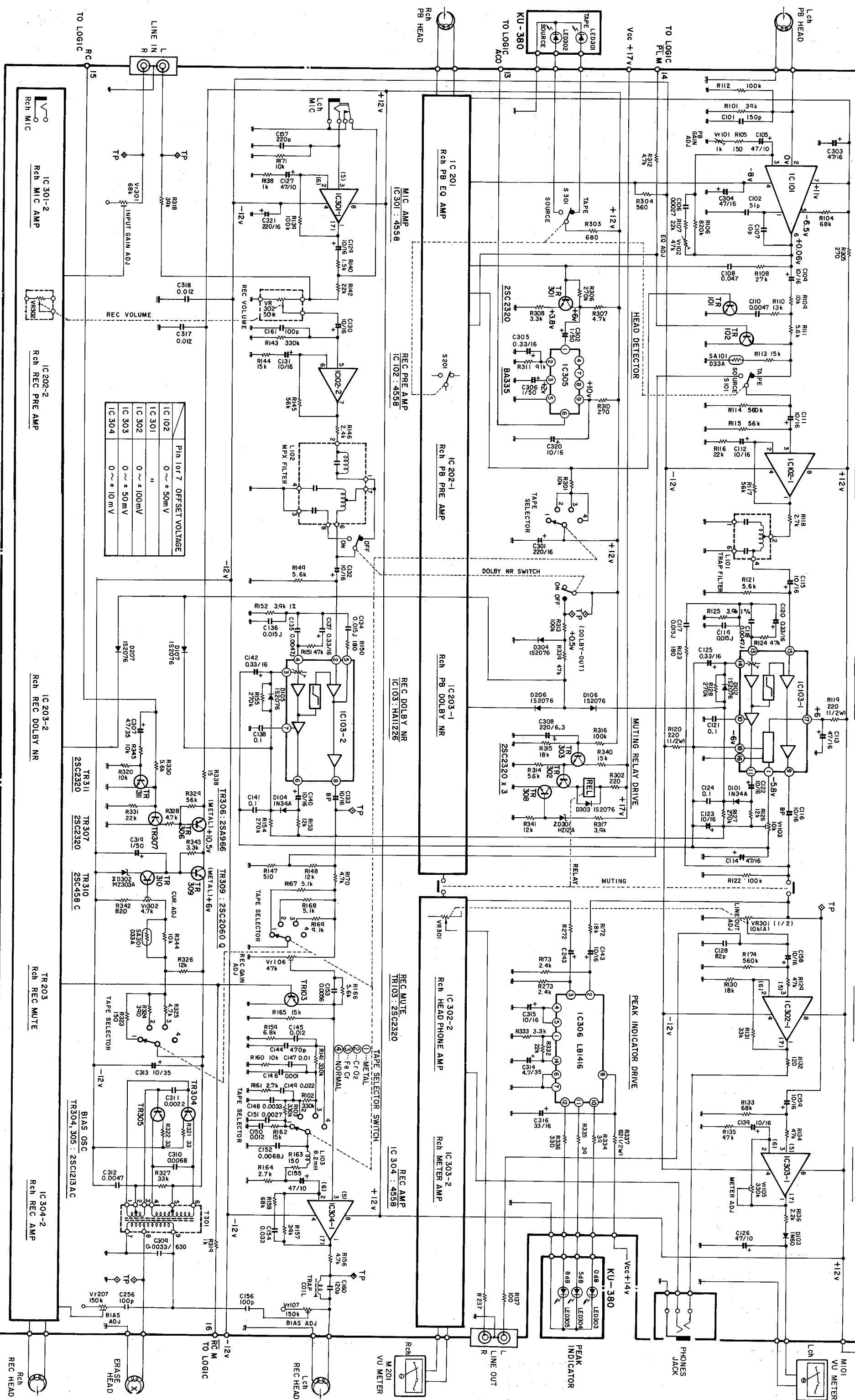
TR101,102
2SC2320

PB PRE AMP
IC102: 4558

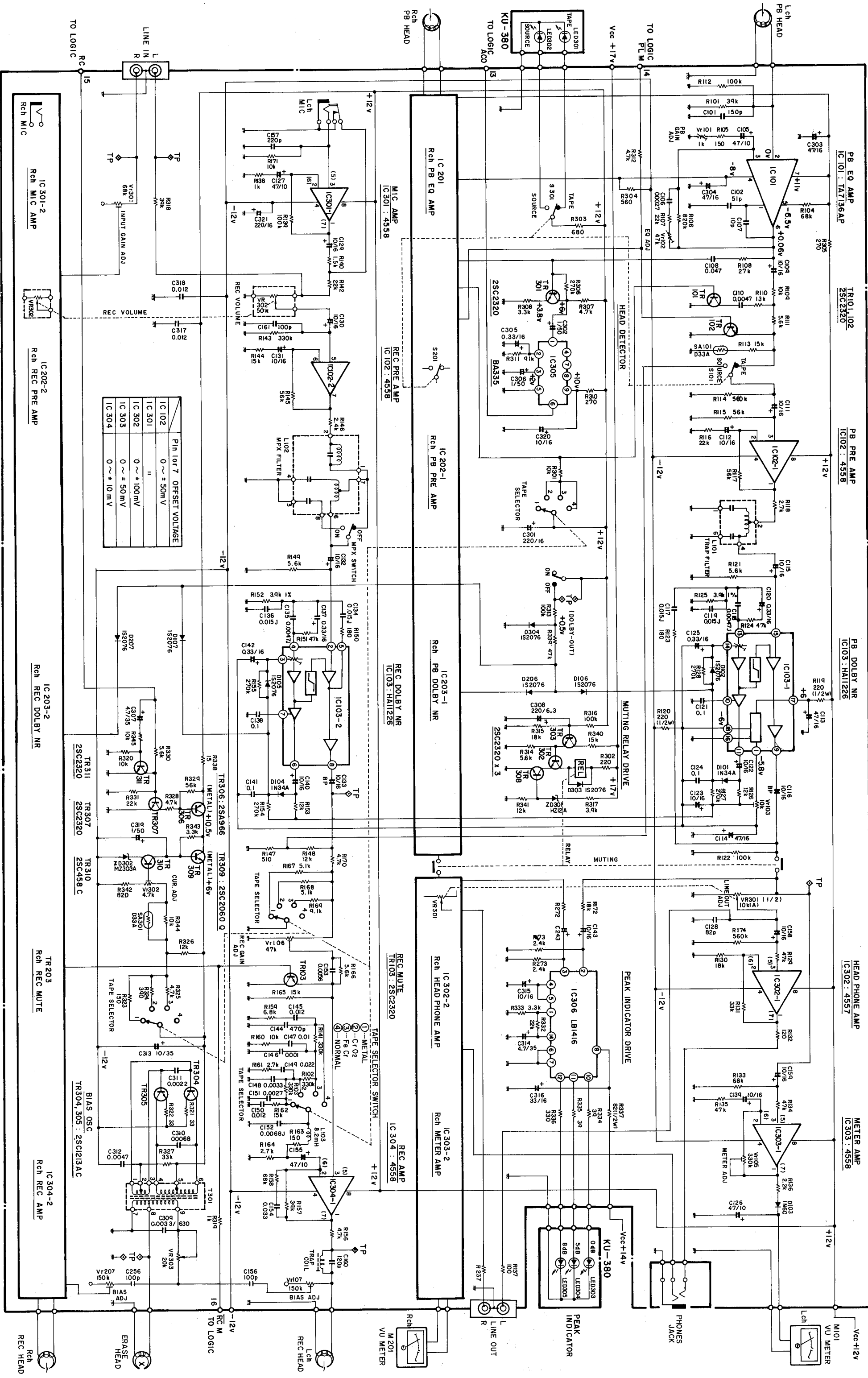
PB DOLBY NR
IC103: HA11226

HEAD PHONE AMP
IC302: 4557

METER AMP
IC303: 4558



AUDIO AMP UNIT KU-365



KU-379H DRIVER UNIT

Ref. No.	Part No.	Part Name	Remark
SEMICONDUCTOR GROUP			
IC801	2620326007	BA6109	
TR803, 807	2710102005	2SA1015Y	
TR802, 806	2710117003	2SA1020Y	
TR812	2720055029	2SB772(Q/P)	
TR801, 805, 809~811	2730204019	2SC2320F	
TR804, 808	2730212001	2SC2655Y	
D805~810	2760237001	RV06	
ZD801	2760052037	HZ11B	
ZD802	2760185030	HZ4B1	
ZD803	2760218017	HZ9A2	
D811	2760001004	1N34A	
RESISTOR GROUP			
R826	2412044005	RD14B2E100J	Carbon film 10ΩJ ¼W
R817	2412076002	RD14B2E221J	220ΩJ ¼W
R804, 812	2412094000	RD14B2E122J	1.2KΩJ ¼W
R801, 809	2412096008	RD14B2E152J	1.5KΩJ ¼W
R807, 815	2412140000	RD14B2E332J	3.3KΩJ ¼W
R823	2412108006	RD14B2E472J	4.7KΩJ ¼W
R806, 814	2412112005	RD14B2E682J	6.8KΩJ ¼W
R803, 805, 811, 813, 818, 819	2412116001	RD14B2E103J	10KΩJ ¼W
R824, 825	2412120000	RD14B2E153J	15KΩJ ¼W
R822	2440027023	RS14B3A680JNBF	Metal oxide 68ΩJ 1W
R802, 810	2440043023	RS14B3A152JNBF	1.5KΩJ 1W
R821	2440085023	RS14B3D820JNBF	82ΩJ 2W
R808, 816	2440129028	RS14B3F100JNBF	10ΩJ 3W
CAPACITOR GROUP			
C808	2544010004	CE04W1A101=	Electrolytic 100μF 10V
C807	2544018006	CE04W1C101=	100μF 16V
C804	2544027000	CE04W1E470=	47μF 25V
C803	2544029008	CE04W1E221=	220μF 25V
C801, 802	2544034006	CE04W1V4R7=	4.7μF 35V
C805	2551072006	CQ93M1H103K	Film 0.01μF 50V
C806	2551084007	CQ93M1H104K	0.1μF 50V
OTHER PARTS GROUP			
	2228343408	DRIVER P.W.B.	
	4178046002	HEAT SINK(Z)	
	4178062109	HEAT SINK(L)	
	2035622053	12P MINI CONNE. PIN	
	2050082021	2P WRAPPING TERMINAL	
	2058007008	BOARD IN TERMINAL	

KU-0380 PEAK INDICATOR UNIT

Ref. No.	Part No.	Part Name	Remark
	3939078003	LN222RP	(RED)
	3939099008	LN422YP	(YEL)
	3939079002	LN322GP	(GRN)
	2228303008	PEAK INDICATOR P.W.B.	

KU-0374 TIMER UNIT

Ref. No.	Part No.	Part Name	Remark
	2129134101	PUSH SWITCH	
	2228330107	TIMER SW P.W.B.	

KU-0375 TIMER UNIT

Ref. No.	Part No.	Part Name	Remark
	2129139009	PUSH SWITCH	
	2228330107	TIMER SW P.W.B.	

KU-333-1 POWER WIRING UNIT

Ref. No.	Part No.	Part Name	Remark
	2228197010	AC POWER BOARD	
R500	2410163001	RD14B2H121J	120ΩJ ¼W
C500	2518001007	CP05C==AC103M	0.01μF 450V AC
	FEP1287	FUSE HOLDER	
F1	2061015045	FUSE	315mA 250V
	EE 1656	BASE TERMINAL	

DENON

NIPPON COLUMBIA CO., LTD.

No. 14-14, 4-CHOME AKASAKA,
MINATO-KU, TOKYO JAPAN

TEL: 03-584-8111

TLX: JAPANOLA J22591

CABLE: NIPPON COLUMBIA TOKYO